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PREFACE

The Society of Medical Officers of Health held its first meeting on the 13th of May, 1856, and has now reached the fiftieth year of its existence. It was content to make an Annual Report until 1879. In that year the Society commenced to issue an annual volume of transactions until the session 1886–1887. In the autumn of the latter year the Society started the publication of this monthly periodical under the title of Public Health, and although Volume I. of the Journal only bears the date of 1888–89, it also contains the transactions of the Society during the latter part of 1887, which in the ordinary course of events would have formed a volume dated 1887–88.

Under the able direction of successive editors—A. Wynter Blyth, Arthur Newsholme, Reginald Dudfield, and Francis J. Allan—Public Health has brought together and placed on permanent record a mass of current information valuable not only for present use, but also for future reference by all who are interested in the prevention of disease and the improvement of health.

This XVIIth Volume carries on faithfully the tradition of the preceding volumes as a current authoritative journal of hygiene, and it is interesting to look back and trace in the pages the widening of the scope and the deepening of the influence of this science, and its practical applications to national welfare.

It is the last privilege of the retiring President of the Society at the end of his year of office to write the preface of the Volume of the Journal just completed, and thus the prologue of the Journal becomes the epilogue of the President—*Ave atque Vale.*

JOHN F. J. SYKES,

President of the Incorporated
Society of Medical Officers of Health.

October, 1905.

CONTENTS.

No. 2, Vol. XVII., November, 1904.

PAGE

EDITORIALS—

Focs'le Accommodation in the Mercantile Marine - 73
The Public Health Act, 1904 74

SPECIAL ARTICLES—

A Retrospect (*Eben. Davies, M.R.C.S.*) - - - - 76
The Use of Water Gas and other Gases in Factories.—Carbonic Oxide Poisoning (*Arthur Whitelegge, C.B., M.D., F.R.C.P.*) - - - 82

ANNOTATIONS—

Official Classification of Diseases in Germany - 75
The Relations of Medical Officers of Health and Sanitary Inspectors - - 81

PAGE

ANNOTATIONS (*continued*)—

Presentation to Professor Kenwood - - - - 81
A possible source of error in Fat Determination by Extraction Methods - 85
Difficulties in dealing with Milk Adulteration - - 86
Compulsory Notification of Consumption - - - 89
The Production and Consumption of Meat and Dairy Products - - - 90
Sewage Effluent Standard 91
The Relation of Temperature to the Keeping Property of Milk - - - 92
Effect of Food Preservatives on Health - - 92

(*Continued on Page* vii.)

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CONTENTS—*continued.*

ANNOTATIONS (*continued*)—

PAGE
The Australasian Commonwealth Quarantine Conference - - - - - 93
The Prevention and Treatment of Cancer - - - 94
Pathogenic Importance of Hyphomycetes - - - 94
Unsound Meat Prosecutions 97
Water Supplies in Korea - 97
Scarlatinal Infectiousness 101
Death of Dr. J. B. Russell 102
Dr. James Wallace - - 103
Enteric Fever and Oysters 103
Conference re Vagrants and Smallpox - - - - 121

LAW REPORTS—

Morris *v.* Beal - - - - 95
Salicylic Acid & Ginger Wine 95

REVIEWS—

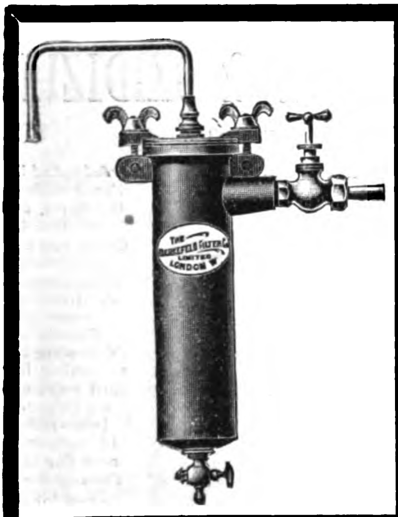
Health and Municipal Building with large Open Spaces - - - - - 98
Practical Chemistry including simple Volumetric Analysis and Toxicology 99
The Annual Report of the Metropolitan Asylums Board - - - - - 99
Food Inspection and Analysis - - - - - - 100

CORRESPONDENCE—

An Aid in the Treatment of Tuberculosis - - - 103

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH, THE—

Annual Meeting - - - - 104
Annual Dinner - - - 114
CURRENT PUBLIC HEALTH LITERATURE - - - 122
NOTICES - - - - - xi-xv



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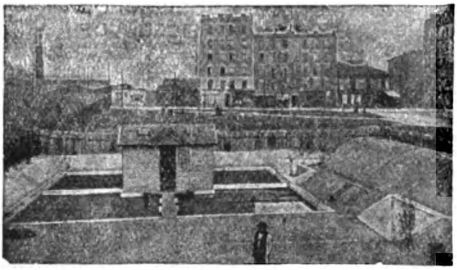

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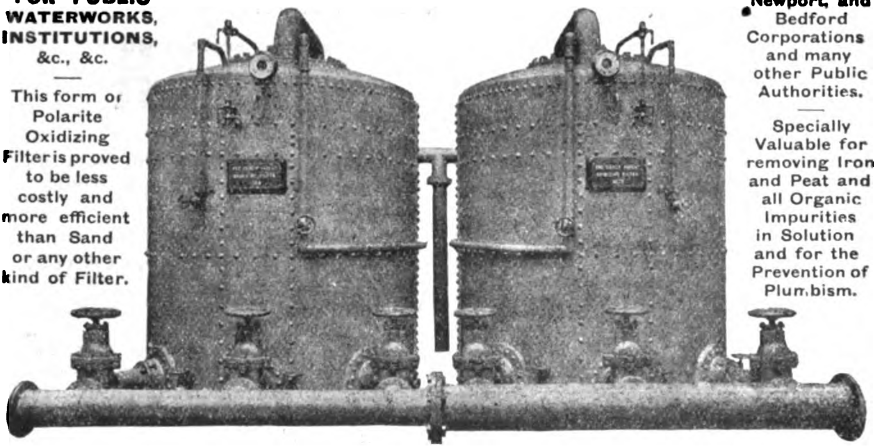

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VOL. XVII. No. 2. NOVEMBER, 1904.

EDITORIALS.

FOCS'LE ACCOMMODATION IN THE MERCANTILE MARINE.

THE legislature, in its wisdom, has seen fit to fix by Act of Parliament or Orders in Council the cubic space considered to be necessary to health under diverse conditions, all the estimates assuming a reasonable amount of ventilation. Among others they have laid down that the conditions and habits of the class availing themselves of common lodging houses justify so low a standard as 240 cubic feet, though they insist on 300 for workhouses. Byelaws in London require 400 for lodgings occupied by day and night, and soldiers in barracks, as being all strong, healthy men, are allowed 600. Yet the Merchant Shipping sanctions, and the Board of Trade approves, on board cargo and passenger boats, the grossly insufficient allowance of 72 cubic feet, combined with an utterly inadequate provision for ventilation, and often for long periods with practically none. It is true that besides speed and stability, the naval architect has in such vessels to aim at securing the largest carrying capacity, and what success is occasionally attained may be judged by the enormous difference in some cases between the registered and the actual or net tonnage. But while the provision amidships and on the upper or promenade decks for saloon passengers of ample cabin space and accommodation, which, if not positively luxurious, leaves nothing to be desired for health and comfort (though it is seldom that cabin passengers yield any considerable profit), is deemed consistent with the design of a cargo boat, and the officers' quarters are all they can reasonably expect, the rank and file of the crew, seamen, firemen, and even skilled artificers, as carpenters and enginemen, are huddled in dark, dirty dens with the minimum of light and air, and perhaps no provision whatever for personal ablution. Their quarters occupy the fore part of the ship, are reached by stairs, narrow, dark and steep, and, according to the number of the crew, are arranged on one, two, or three decks, the lowest being usually below the water line, save near the ceiling. The uppermost receives some light from prisms in the deck, but the bows being exposed to the full force of the waves, as the vessel ploughs her way, it is only in exceptionally calm weather that the ports can be opened.

The moisture exhaled from the lungs condenses on the cold iron, and trickles down the grimy walls, against which are ranged bunks in which firemen rest in the intervals between the four-hour watches, in clothes laden with coal-dust and "blacks." The excessive heat of the engine house is relieved by ventilating fans, but in the focs'le, in cold weather, animal heat takes the place of fire. Those who have had to spend hours in the foulest common lodging houses, or shelters, and in the worst of sweaters' dens, may form some conception of the state of that in which the "mariners of England" have to sleep, to live, and to eat. Yet it is certain that if the Board of Trade could be induced to take the matter in hand, realizing the scandal of treating our seamen far worse than tramps and criminals, a remedy could be found, even at the sacrifice by the owners of a tithe of the cargo space. Raised focs'les or deck cabins indeed are found on some ships, and only need improved lighting and ventilation; in others carrying cargo only, the deck cabins might be put up amidships also; while lastly, in those cases, if any, where the whole of the crew must be confined to the bows, and several decks must be thus occupied, efficient ventilation might, we think, be attained by an open, central, rectangular shaft or well, into which the cabins on each deck would open by light iron balconies and ladder, the mouth of the shaft being protected from rain and seas by a movable awning. We would call the attention of Port Medical Officers of Health to the question.

THE PUBLIC HEALTH ACT, 1904.

We have had comparatively few Public Health Acts during recent years, so that even the short one which was passed during last session deserves special notice. It came into force when it received the Royal Assent, namely, on the 15th of August last, and may be referred to as 4 Edw. VII, C. 16. Its object is to enable the Local Government Board to make further regulations to prevent the spread of epidemics by vessels arriving at or sailing from any port. The necessity for the Act arose from the fact that the Board had not power to make such regulations as are required to carry out treaties, conventions, and arrangements with foreign countries in regard to vessels, and what this Act does is to give the Board the necessary authority.

It is also enacted that the regulations may provide for any powers and duties under them being executed and performed by local authorities. It may console these authorities to learn that the regulations are also to provide for the recovery of any expenses incurred in disinfection, and of any charges authorized to be made by the regulations or any services performed thereunder.

The powers previously possessed by the Local Government Board to make regulations to prevent the spread of epidemics are to be found in sections 130 and 134 of the Public Health Act, 1875, which were extended to London by the Public Health (London) Act, 1891. The powers under these sections were substantially increased by the Public Health Act, 1896, which also repealed the various statutes relating to quarantine. Under that Act the regulations were to be performed by the Officers of Customs and the officers and men of the Coastguard, as well as by other authorities and officers. They were to provide for the signals to be hoisted by vessels having any infectious case on board, the questions to be answered by masters, pilots, and others on board, the detention of vessels and persons on board, and the duties to be performed by masters, pilots, and such other persons. In that Act it was also provided that regard should be had to the expediency of uniform regulations throughout the whole of the United Kingdom, and the same provision will apply to the new Act, as it will be read and construed as if it were part of the earlier one. It contains provisions specially adapting it to the different health statutes in force in Scotland and in the Isle of Man, to which it is expressly extended. The regulations are only to be made after consultation with the Board of Trade. Whether the Act is to prove of value will depend very much upon the nature of these regulations.

OFFICAL CLASSIFICATION OF DISEASES IN GERMANY.—The new official decree establishing the classification of diseases for purposes of notification and vital statistics for Prussia has just been published. It is given in full in the *Münch. Med. Wochenschrift* for June 14th, filling four pages. There are six groups of possible causes of death, with 176 titles and numerous sub-titles. The first group includes the infectious diseases, the zoonoses and parasitic affections. The rubric "zoonoses" includes the four diseases, hydrophobia, anthrax, glanders, and foot and mouth disease. The parasitic affections are subdivided as due to worms, to the ray fungus, and to mycelium fungi. There is a still minuter classifieation by the kind of type used. Tuberculosis has sub-titles from *a* to *o*, with a few subdivisions.

A RETROSPECT.*

By EBEN. DAVIES, M.R.C.S.,
Medical Officer of Health for the County Borough and Port of Swansea;
President of the West of England and South Wales Branch of the Incorporated Society of Medical Officers of Health.

I HAVE thought it might be of interest to compare the conditions that obtained in my own district at the time I was appointed, with those now existing, both as regards the state of the public health and the machinery for safeguarding the vital interests of the population.

The earliest information as to the sanitary state of Swansea I have been able to refer to, is contained in the second report of a Royal Commission presented in 1845 on the "State of Large Towns and Populous Districts," which included the Welsh towns of Swansea and Merthyr Tydfil. The Commissioner was Sir Henry Delabeche.

The growth of the two towns was at that period rapid, the increase of population in the previous decennial period having been in Merthyr Tydfil 50·8 per cent, in Swansea 26·6 per cent. Swansea District held a position apparently not unfavourable among the Welsh towns with a death-rate of 17 per 1,000, as compared with Cardiff District 20 per 1,000, and Merthyr Tydfil 25·7 per 1,000. But the statistics of Swansea and Cardiff were not fairly comparable with those of Merthyr, for both Swansea and Cardiff Districts included extensive areas in the county inhabited by a purely agricultural population, whereas Merthyr Tydfil was circumscribed within narrower limits, with a population composed almost entirely of colliers and ironworkers.

As regards Swansea, any inference deduced from the comparatively low death-rate has to be further qualified by the fact that there must have been for many years a large immigration of young and healthy adults who crowded into the district for employment. Indeed, in 1845 it was stated that one-third of the population had been born outside the County of Glamorgan.

The quality therefore, rather than the amount of the mortality, becomes important; and the quality was bad.

In the Swansea District, which included the Gower Peninsula, deaths from consumption were 1 in 4·8 of the total deaths; from "typhus," which probably included enteric and continued fever, 1 in 11; from "epidemics including typhus," 1 in 3·5. The Inspector reports: "Nothing deserving the name of a system of drainage can be said to exist." The public water supply was only available for one-fourth of the inhabitants, and the bulk of the population were dependent upon pumps or open watercourses. The most satisfactory feature recorded in the report was that "single family occupancy of houses was the rule." Would that we could say so now. With steady increase of the population the sanitary condition did not improve, and largely through the influence of an eminent physician, Dr. Bird, Mayor of the Borough, and, later, of Mr. W. H. Michael, also a member of the Council, the importance was recognized of taking measures to carry out the provisions of the Public Health Act, 1848; and in Sept., 1853, a resolution was carried that an Officer of Health be appointed, that the appointment be for twelve months, and that the salary be £150. Swansea was fortunate in securing in Mr. W. H. Michael the services of a gentleman who had long taken a keen interest in sanitary matters and who was well versed in municipal administration.

---

* Presidential address, October, 1904.

Mr. Michael resigned his seat on the Council to take up the appointment, and devoted himself zealously to the performance of his duties. The sanitary defects of the town in respect of scavenging, drainage, and water supply were fearlessly exposed by Mr. Michael, and his urgent advice was emphasized by the arrival of cholera in England in 1853. The carrying out of his recommendations, however, involved expenditure, and the making of a Board of Health rate roused great opposition within and outside the Council, and proceedings had to be taken to enforce the payment by ratepayers who challenged its legality. Indeed, one member of the Council stoutly declared that it would be as easy to strike fire out of a turnip as to get people to pay the rate. Before the end of the year it was resolved that the appointment should not be renewed.

Mr. Michael's report on the sickness and mortality of Swansea during his year of office and the five years preceding showed that the death-rate for 1854 was 19 per 1,000, as compared with 22·5 in the previous five years. Mr. Michael received the thanks of the Council for his able and efficient services, and shortly after a proposal to appoint an Officer of Health was advertised—salary £50. Within a month it was resolved to postpone the matter until Sir Benjamin Hall's Bill for amending the Public Health Act was introduced.

The amending Act was not passed until 1858, and the proposal was adjourned *sine die*. A Surveyor had, however, been appointed, and an Inspector of Nuisances in the person of the Superintendent of Police, who was "to be henceforth responsible for the due discharge of the duties," with a salary of £10 per annum.

From this time the question slept for over ten years. But it is only fair to say that the period 1855–1865 was marked by great activity in carrying out sanitary works of water supply and sewerage, and the borrowing powers of the Corporation during this period were exercised to the amount of over £170,000. Mr. Michael, who had returned to the Council, and was Mayor in 1857, took his full share in the administrative measures which resulted in carrying out large works of sewerage and water supply.

It was not until the passing of the Sanitary Act, 1866, that sanitary action was compulsory on any authority, but in 1865 the outbreak of yellow fever in Swansea woke up the municipality to the need for immediate action. The circumstances were, shortly, the following: On Sept. 8th, 1865, the barque *Hecla* arrived off Swansea from Cuba with a cargo of copper ore, having lost three men during the voyage from illness, the nature of which was not disclosed on her arrival, and having a man on board sick of (alleged) dropsy. No mention was made of yellow fever, and the ship was towed in in the ordinary course. The crew, including the three sick seamen and two passengers, were landed, and gangs of men commenced to discharge the cargo. One of the sick seamen died the day of the landing. Within six days of the arrival of the *Hecla* a man who had been on board the ship became ill of yellow fever, and between Sept. 15th (when the first case occurred) and Oct. 13th (when the last case became convalescent) there were twenty-two cases in which the diagnosis of yellow fever could be pretty certainly made, and seven other cases in which the character of the attack or the circumstances of exposure led to a more or less strong suspicion that the illness was of the same nature. Of the 22 cases diagnosed as yellow fever, 15 died, besides the man brought by the *Hecla*, and 7 recovered. Of these 22 cases, 21 occurred in persons living or working in the close neighbourhood of the infected ship or of the portion of cargo which had been discharged, and the evidence tending to negative personal contagion was very strong. Persons lay sick of yellow fever in various parts of the town, and no extension of the fever occurred in any of these centres, at least twelve in number.

The circumstances of this outbreak were so unprecedented, in British experience, and so alarming, that Dr. (afterwards Sir George) Buchanan was instructed by the Privy Council to visit Swansea and to investigate the circumstances of the outbreak, and he spent some time in the investigation. His most interesting and classical report on "Yellow Fever in Swansea" will be found in the *Eighth Report of the Medical Officer of the Privy Council*, 1865.

In addition to vigorous action in dealing with the outbreak, the Corporation, on the urgent representation of Dr. Buchanan, resolved to appoint a Medical Officer of Health at a salary of £100 a year, and eventually, in Oct., 1865, I was appointed.

And here I must record with gratitude my indebtedness to Dr. Buchanan for his kindness, and the encouragement and help he rendered me in taking up my new duties, for which the medical curriculum of those days provided no special training. Some admirable reports of Dr. Buchanan as Officer of Health of the St. Giles' district, and the reports of Mr. Michael, which were especially valuable on account of their local references, were, I may say, all I had to start with, and were of great service.

The period 1863–73 was a period of big epidemics. With a mean general death-rate of nearly 24 per 1,000, the zymotic rate (not including cholera in 1866) averaged 4·5; scarlet fever, 1·6; "fever," ·69; small-pox, ·65, and during three consecutive years of this period reached the high annual rate of 1·76 per 1,000, the aggregate mortality from small-pox in the three years reaching a total of 274 deaths in a population of 52,000. Of course there was no notification of infectious sickness, and in numerous instances the first intimation of the presence of small-pox was obtained from the death register. During the thirty years that have elapsed since 1873 small-pox deaths have not averaged two per annum, and of the total number more than half occurred in the 1902 outbreak.

Cholera was still more disastrous. Swansea, which had suffered severely in the epidemics of 1832 and 1849, had a mortality from cholera in 1866 of 363 persons, corresponding to an annual rate of 7·9 per 1,000. This heavy mortality was especially disappointing. A new and abundant water supply had only recently been provided, and the deep sewerage of the town was partially carried out, but was not operative in the quarters where the epidemic was most fatal; and in the rural district of Llangyfdach, where there was neither sewerage nor water service, the mortality reached the high rate of 17 per 1,000.

At the risk of wearying you, I must just refer to two outbreaks of enteric fever which occurred in Swansea in 1879 and 1885. There was strong presumptive evidence that the 1879 outbreak was water-borne; but in the outbreak of 1885 the evidence of specific contamination of the supply was conclusive, the proofs being: (1) The special incidence of fever to districts both within and without the borough supplied with water from the public supply; (2) Special exemption from fever of parts of the borough not so supplied; (3) The existence on the watershed of cases of enteric fever at a period consistent with the date of the outbreak in the borough, continuing in operation for a period of four or five weeks and then ceasing suddenly. The outbreak was very extensive, and simultaneous in all parts of the district. Within a period of five weeks over 500 cases were notified, and the mortality ultimately reached a total of forty-eight. The streams from the polluted area were at that time diverted, and have never since formed any portion of the borough supply.

And now, in conclusion, may I mention a few figures which serve to show that Swansea, in common with other parts of the kingdom, has shared in the benefit of sanitary progress during the last thirty-eight years, the periods compared being the ten years 1866–75 and the eight years 1896–1903, the later decennium not being complete:—

General death-rate, reduced from	23·6 to 18·3	per 1,000
Zymotic ,, ,, ,,	4·49 to 2·14	,,
Fever ,, ,, ,,	·75 to ·12	,,
Phthisis (above five years) ,,	2·18 to 1·51	,,

There are, however, two classes of mortality which should be mentioned in which progress has not been maintained, namely diarrhœa mortality, and the mortality of children under one year.

Diarrhœa in the ten years 1866–75 had a death-rate of ·70 per 1,000; in the next ten years it fell to ·37, but in the two later periods of ten and eight years it was ·40 and ·41 respectively. It probably is the case that the inclusion during the last few years of most of the deaths from "enteritis," "gastro-enteritis," etc., which were formerly recorded separately, but now swell the "diarrhœa" deaths, accounts for the non-improvement.

The same cannot be said of the deaths of infants under one year. In Swansea at all other ages, up to five years, there has been improvement; but the proportion of deaths under one to births, which in the two decennial periods ending 1875 and 1885 was 143 per 1,000, has risen during the two later periods of ten and eight years to 160 and 162 per 1,000 respectively. I can assign no satisfactory reason for the change. I suspect, however, that among the causes that contribute to this result are the shirking of the duty of nursing their children on the part of mothers, the sophistication of milk, either by the addition of chemicals or the subtraction of cream, and the very general and too early use of unsuitable food, patented or otherwise.

I must apologize for having detained you so long with what is not much more than a bare recital of facts and circumstances mainly of local concern, interesting to myself certainly, but I fear much less so to yourselves. In closing I should like to congratulate my younger brethren on the goodly prospect opening up before them. I congratulate them on their splendid scientific equipment for their work, an advantage denied the older generation of Health Officers; on the successes they are achieving; on the future so full of promise in regard to a reduction of the national death-rate, which I believe will eclipse previous records, especially in the prevention of tuberculosis; and, not least, on the awakened interest of all classes of the community in every measure tending to promote the social and moral progress of the people.

THE RELATIONS OF MEDICAL OFFICERS OF HEALTH AND SANITARY INSPECTORS.

Commenting on a report published by the London County Council on the number of Sanitary Inspectors attached to metropolitan boroughs, the Editor of the *British Medical Journal* (July 16th, 1904) writes: Though occasionally unsatisfactory men are employed, and injudicious and perhaps even unfair action is taken by sanitary inspectors, yet on the whole, it will be admitted that these officers perform useful and necessary work, which results broadly in a more healthy and sanitary life for all. There are, however, two criticisms which we may offer to the Medical Officers of Health in respect to sanitary inspectors. In the first place, it should be an invariable rule that sanitary inspectors, not being medical men, should never be permitted to take upon themselves the work of their chiefs. It is not the business of a Sanitary Inspector to express opinions on cases of infectious disease, or to criticize the action of the medical man in attendance, or to examine even cursorily the physical condition of the patient, and any infringement of this rule should be visited with adequate reproof. The second point we would mention is one concerning administration; the Medical Officer of Health should occupy his right position as superior of all his Inspectors. We have heard of chief sanitary inspectors who seemed to be of opinion that they were medical officers of health. Any such usurpation of position is highly to be deprecated, and is generally the fault of the Medical Officer himself. Infringements of this rule have led to serious difficulty in more than one case on record. The Medical Officer, and not the Chief Inspector or any other official, is, or ought to be, the head of a Public Health Department, and he is not doing his duty if he does not occupy his right position. We may add, further, that in our opinion the Medical Officer should furnish the whole of the annual report. The issue of a separate report on the sanitary inspectors' work by the senior sanitary inspector is to be deprecated, as it leads to a misunderstanding as to who is the head of the Department, and who is responsible. If these two points always received the attention they deserve, we should hear less complaint of sanitary inspectors overstepping their position.

Presentation to Professor Kenwood.—At a recent meeting of the Finchley District Council, Professor Kenwood, for ten years Medical Officer of Health, was presented, on his resigning the office, with an illuminated address and silver salver in appreciation of his services to the district.

THE USE OF WATER GAS AND OTHER GASES IN FACTORIES—CARBONIC OXIDE POISONING.*

By ARTHUR WHITELEGGE, C.B., M.D., F.R.C.P.,
H.M. Chief Inspector of Factories.

In recent years there has been great extension of the manufacture and use of water gas and other gases of a similar nature (Dowson gas, Mond gas, Power gas, Producer gas, Blast furnace gas, etc.) for heating furnaces and boilers in factories, driving gas engines, welding, and many other industrial purposes. The particular danger associated with all these gases is that of poisoning by carbonic oxide (carbon monoxide, CO), which is also a constituent of ordinary coal gas. But whereas the proportion in coal gas varies from 4 to 12 per cent, in carburetted water gas it reaches 30 per cent, and in uncarburetted water gas 50 per cent. The other gases named above usually contain from 10 to 25 per cent.

The use of these gases was the subject of an enquiry in 1899 by a Departmental Committee (C. 9164), who recommended in their Report that the manufacture and distribution for heating and lighting purposes of any poisonous gas which does not contain a distinct and pungent smell should be prohibited, and that regulations should be made limiting the proportion of carbonic oxide. In recent Acts authorizing companies and local authorities to manufacture and supply Mond or similar gas for motive or heating purposes it is required that (1) the quantity of carbonic oxide in the gas shall be limited to 14 per cent; and (2) the gas shall be strongly scented. It is made the duty of H.M. Inspectors of Factories to enforce these provisions as regards factories and workshops to which the gas is distributed.

The Annual Reports of the Factory Department during the five years 1899 to 1903 contain references to at least 51 cases, including 17 deaths, of poisoning by carbonic oxide on manufacturing premises; 43 were due to one or other of the gases named above. These casualties were traced to several causes, among which may be mentioned:—(1) Leakage from joints or taps in pipes or flues conveying gas; (2) Gradual escape of the gas into a confined atmosphere, as into a small engine-room or the syphon-pit of the Dowson apparatus; (3) Cleaning of tanks or flues before a sufficient time has been allowed for the gas to escape; (4) Underground situation of flues; (5) Inodorous nature of the gas; (6) Ignorance of the danger from the gas and of the earliest symptoms produced by it; (7) Working alone; (8) Lack of rescue appliances; (9) Incomplete combustion of gas in defective gas ironing machines.

Carbonic oxide poisoning may occur in other ways without inhalation of the particular gases named. Thus danger of this kind may arise in laundries from the use of gas irons, and in workrooms from defective gas fittings and from gas stoves, especially when no provision is made for the products of combustion to be carried away by a flue or chimney. The absence of a chimney in a room greatly increases the risk. Carbonic oxide is found also in lime kilns, cement works (see form of notice *below*), and where braziers and coke fires are used in confined spaces.

Symptoms of Carbonic Oxide Poisoning begin with throbbing of the blood vessels of the head, giddiness, palpitation of the heart, and weakness of the limbs. These become greatly aggravated after any exertion. Owing to their insidious onset and the cumulative effect of the gas, the weakness of the limbs may come on without attracting notice, so that the person affected is unable to make good his escape from the poisonous atmosphere.

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* Home Office Memorandum, Form 827, Sept. 1904.

Headache, anæmia, and defective nutrition may result from the long continued breathing of the gas in amount too small to produce immediate effects, such as might occur from defective gas fittings in work rooms.

The appropriate remedies for poisoning by carbonic oxide are—fresh air, artificial respiration, administration of oxygen, and the application of warmth.

Preventive Measures.—The precautionary measures to be considered must vary somewhat according to the different manner in which the gas is manufactured and used in one and another factory, but the following are of general application :—

1. Notices should be posted up stating the deadly nature of the gas, the symptoms produced by its inhalation, and the best means of rendering aid to those who are "gassed."
2. Persons in charge of any engine worked by gas, or of any apparatus in which it is stored, or otherwise exposed to risk of inhaling carbonic oxide, should be free from any disease of the heart or lungs. Employers would do well to cause such persons to be examined and certified by a medical man.
3. No engine in which the gas is used should be in a confined space.
4. A competent and responsible person should, at stated short intervals inspect all valves and connections, to see that there is no escape of gas; and a signed record with the dates of such inspections should be kept.
5. The openings giving access to any part of the gas circuit should be few, and in positions as safe as possible, and opened only in cases of real need and by responsible persons.
6. No workman should enter, or approach when opened, the holder or other part of the gas circuit until the gas has been well flushed out by fresh air.
7. A cylinder of compressed oxygen, fitted with a piece of rubber gas-tubing and a mouthpiece, should be kept in constant readiness. Such cylinders can be obtained fitted also with a reducing valve.
8. Medical aid should be summoned immediately, but in view of the importance of losing no time in commencing treatment, the workmen employed should be instructed by a medical man in the manner of administering the oxygen and of performing artificial respiration. They should be especially warned of the danger of exposing the patient to cold.

Respirators are of no avail as a protection against carbonic oxide poisoning.

When, for purposes of rescue, it becomes necessary to enter an atmosphere charged with the gas, the rescuer must protect himself by tying a rope securely round his waist, the free end being held by persons outside, or, preferably, by the use of one or other of the special rescue appliances designed for such work. The principle underlying them is that the rescuer is made to breathe air, or a mixture of air and oxygen, which renders him independent of the poisonous atmosphere immediately surrounding him. Reference to such appliances, which are now kept in many chemical works, &c., will be found in the Annual Report of the Chief Inspector of Factories for the year 1895, p. 47, and for the year 1896, p. 31.

In towns where the public gas supply is largely charged with water gas, attention to gas fittings in factories and workshops becomes a matter of increased moment.

The following notice, which has been drawn up by the Power Gas Corporation, Ltd., in consultation with the Medical Inspector of Factories to be posted up near the place where danger arises, may serve as a model:—

Danger of Gassing.

Breathing of Producer Gas should be avoided. It is dangerous when breathed in quantity.

The first symptoms produced by breathing the gas are giddiness, weakness in the legs, and palpitation of the heart.

If a man feels these symptoms, he should at once move into fresh warm air, when in slight cases they will quickly disappear.

Exposure to cold should be avoided, as it aggravates the symptoms.

A man should not walk home too soon after recovery, as muscular exertion, when affected by the gas, is to be avoided.

If a man should be found insensible or seriously ill from the gas, he should at once be removed into fresh warm air, and immediate information be sent to the oxygen administrator, a medical man being sent for at the same time.

No man should work alone on any work which would be likely to involve exposure to the gas. Should the nature of the work cause the man to enter a culvert or hole, he should have a rope tied securely round his waist, held at the other end by his mate standing outside.

Use of the Oxygen Cylinder.

The cylinder should be provided with a lever key, nipple and union, together with a rubber tube at the end of which is a mouthpiece. It is also advisable to have a small pressure gauge attached to the cylinder, so that loss of oxygen may be observed and the cylinder kept in working order.

Open the valve gradually by tapping the lever key (fully extended) with the wrist until the oxygen flows in a gentle stream from the mouthpiece in the patient's mouth, and allow the oxygen to be breathed until relief is obtained. The lips should not be closed round the mouthpiece, as it is important to allow free egress for surplus oxygen. The nostrils should be closed during inspiration or inflation of the lungs, and opened during expiration or deflation of the lungs, so that the oxygen may be inhaled as pure as possible through the mouth.

If the teeth are set, close the lips and one nostril. Let the conical end of the mouthpiece slightly enter the other nostril during inspiration, and remove it for expiration.

Artificial respiration is sometimes necessary in addition to the oxygen inhalation if the oxygen does not appear to act quickly.

Place the patient on his back, slightly raising the shoulders with a folded coat; remove everything tight about the chest and neck; draw the tongue forward and maintain it in that position. Grasp the arms just above the elbows, and draw them steadily above the head, keeping them on the stretch for two seconds and then folding them and pressing them against the chest for the same length of time. Repeat these movements about 15 times a minute for at least half an hour, or until natural breathing has been initiated, when the oxygen inhalation alone will suffice.

After recovery, oxygen inhalation at intervals should be continued as desired.

Further detail may be needed in connection with particular branches of industry. Thus, in consequence of the constant danger of carbonic oxide poisoning in cement works, the Associated Portland Cement Manufacturers (1900), Ltd., have adopted the following Notice, in addition to somewhat similar instructions to those given above :—

Regular inspection of kilns must be made on opening after being burnt off to see that they are safe for men to work in.

Under normal conditions the kiln is partly and sometimes entirely drawn before the chamber is cool enough to enter to clear for re-loading, and inspection must cover safety, not only as to heat but as to gases. The eye in front of kiln and back eye of chamber must be opened when drawing is commenced, and entrance to chamber must be made cautiously. Should there be the slightest indication of gas, a paper torch must be thrown into the kiln and seen to burn out properly before work therein is commenced. If after several attempts it is clearly shown that a paper torch will not burn freely, the men must not be allowed to enter, and the matter must be at once reported to the manager. This applies more particularly where there is a kiln burning next to the one that is being drawn, but in any case the dampers of the kiln being drawn must be down tight, and precautions taken generally to see that fumes from a burning kiln on the same flue cannot get back into a kiln in which men are at work, and this applies not only to the work of clearing or drawing, but to repair or any kind of work done in or about kilns.

In case of a kiln which has lain cold for a long period, all the above-named precautions must be observed, and, in addition, before men enter the pan or chamber, the drawing eye of the kiln must be opened, and thoroughly freed below so that the air may pass into the charge. Employées are especially warned against adopting the means employed by many persons ignorant of the first principles of resuscitation, *viz.*, placing men on their faces with mouth over a hole in the ground. All such means are strictly forbidden. The administration of stimulants in any form is most dangerous, and is also strictly forbidden.

A POSSIBLE SOURCE OF ERROR IN FAT DETERMINATIONS BY EXTRACTION METHODS.—C. Barthel (*Nord. Mejeri Tidn.*, 18, 1903, No. 35, *Exp. Stat. Rec.*) finds that vigorous stirring of skim milk, as occurs in the Pasteurization of the milk in some Pasteurizing machines provided with stirrers, causes a subdivision of the fat globules; and that on drying the milk on paper, kaolin, sand, etc., the numerous minute globules thus formed cannot be dissolved out by the ether, presumably because the surface attraction of the absorbing medium cannot be overcome.

The Gottlieb method, on the other hand, gives correct results in the case of such milks, the percentages being from about one-tenth to four-tenths above those obtained by the Adams method, depending upon the fat content of the milk. The greater differences were observed in case of milk containing considerable quantities of fat. When samples of new milk were churned for 5 to 15 minutes at about 48° C., the results obtained with the separator skim milk by the extraction method were 0·18 to 0·44 per cent too low, while the results obtained by the two methods of analysis agreed within 0·01 to 0·04 of 1 per cent when the milk was not subjected to vigorous agitation.

DIFFICULTIES IN DEALING WITH MILK ADULTERATION.*

The analysts' reports relating to Milk, Butter, and Cheese for the past three years show the following results of the examination of samples submitted for analysis :—

ENGLAND AND WALES.

Year.	Milk.			Butter.			Cheese.		
	Examined.	Adulterated.	Percentage Adulterated.	Examined.	Adulterated.	Percentage Adulterated.	Examined.	Adulterated.	Percentage Adulterated.
	No.	No.	%	No.	No.	%	No.	No.	%
1901	26,143	2,938	11·2	11,938	1,224	10·3	1,652	18	1·1
1902	29,452	3,427	11·6	13,387	865	6·5	1,797	34	1·9
1903	33,090	3,430	10·4	13,766	751	5·5	1,805	26	1·4

SCOTLAND.

Year.	Examined.	Adulterated.	Percentage Adulterated.	Examined.	Adulterated.	Percentage Adulterated.	Examined.	Adulterated.	Percentage Adulterated.
1902	3,027	491	16·2	1,068	58	5·4	141	4	2·8
1903	2,816	368	13·1	885	56	6·3	161	3	1·9

This continued increase in the number of samples taken is the more satisfactory as there has been an undoubted tendency in certain quarters to take fewer samples owing to certain difficulties which have arisen.

The use of preservatives or colouring matters was reported in 1,190 samples taken under the Acts, including 386 of milk and cream, and 579 of butter and margarine; 940 of the samples contained boracic acid or its preparations, 83 contained salicylic acid, 75 contained formic aldehyde, and 92 contained some other preservative or colouring matter.

Jurisdiction of Local Authorities in sampling.—It has been the practice of certain County Councils to make arrangements with the Urban District Councils in the County, by which the Sanitary Inspectors of the District Councils take samples and submit them to the Public Analyst appointed by the County Council, the expense of analysis being wholly or partly defrayed by the County Council. But early in 1902 the question was raised, by way of surcharge on audit, whether the County Council is justified in paying any parts of the expense of analysis of samples taken by an Officer not acting under its direction. Some modification of the arrangements for the execution of the Acts has therefore been necessary in districts where the County Council relied to any extent on the co-operation of the District Councils.

In Essex the Urban District Councils have for the most part ceased to take samples since it has become necessary for them to defray the whole cost of analysis out of their own funds. The ratepayers of the Urban Districts contribute equally with those of other parts of the County to the fund out of which the expenses of the execution of the Acts in the

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* Abstract from Annual Report of Board of Agriculture for 1903.

County generally are paid, and they, presumably, do not feel called upon to make a second contribution for the execution of the Acts in their own district, especially as any fines that may be imposed in cases in which the District Council institute proceedings have to be paid over to the County funds. On the other hand the County Council did not at first see its way to take up the whole of the work of sampling which has been abandoned by the District Councils.

The execution of the Acts in the County of Durham has been affected by similar complications.

In Scotland the arrangements by which the Inspectors of certain County Councils carry out the duty of sampling in some of the smaller Burghs situated within the County are working satisfactorily. If we take the Burghs with less than 10,000 inhabitants, we find that 79 Police Burghs out of 116, and 9 Royal Burghs out of 48 have combined with other Local Authorities for the purposes of these Acts. Unfortunately there are still some small Burghs, the Councils of which do not appreciate the difficulty of exercising satisfactorily the responsible functions of a Local Authority under these Acts. During the year, however, nine more Burghs have joined with Counties for the purposes of these Acts, and the advantages of such a combination in this connection are so obvious, that it is to be hoped that the number of these small Burghs that maintain a separate organization will continue to decrease.

Increasing Difficulties.—Another circumstance which has had some influence in checking the activity of sampling officers, is the increasing difficulty of dealing with milk adulteration

At the time when every Public Analyst made his own standard for milk, and could condemn all samples that did not come up to it, the question whether a deficiency in any constituent of a sample of milk according to the standard adopted by the Analyst was sufficient evidence of adulteration, does not appear to have attracted general attention. But the information made public through the medium of the Report and the minutes of evidence of the Committee on Milk and Cream Regulations offers a strong temptation to make a prosecution for alleged milk adulteration a field for an aggregation of expert and scientific evidence on both sides.

This has been attended with unfortunate results.

At the present time many courts are unwilling to convict in any case of alleged milk adulteration, no matter how unsatisfactory the evidence for the defence may be, so great is the uncertainty created in the minds of the magistrate by the evidence recently put forward in milk cases.

The consequence has been that in districts within the jurisdiction of these courts the seller of genuine milk finds the risk of being unjustly convicted reduced to a minimum. But he has to face the risk of being undersold and driven out of the market by the seller of adulterated milk, who is allowed to carry on his trade with impunity. In order to avoid this difficulty some Local Authorities have made a practice of tracing milk found to be below the standard to its source, and taking a further sample at the cow-shed. If this sample falls below the standard it is then assumed that the first sample of milk was genuine, though below the standard. If the sample proved to be above the standard the fact would be considered to confirm the presumption that the first sample was adulterated. But the taking of the "control" sample, or the "appeal to the cow," as it is generally called, is usually delayed till after the first sample had been analysed, and a period of several days would therefore elapse between the taking of the first sample and the "appeal to the cow." Objection was therefore raised to this on the ground that the delay constituted a grave danger to the honest milk producer, as the quality of the milk might rise in the interval between the taking of the two samples, and he might be condemned instead of exonerated by the analysis of the second sample. An attempt has been made in the County of Durham to get over this difficulty by arranging that on the request of any farmer in the county from whom a sample of milk had been taken by a county inspector, the " appeal to the cow " should be made at his cowsheds within 48 hours of the time when the first sample was taken. It was hoped that this arrangement might work successfully as a means of enabling the seller of genuine milk to avoid all risk of a prosecution under the Acts, and that it might at a later date be adopted by other Local Authorities or even by combinations of Local Authorities. But recent investigations tend to show that considerable changes may occur in the quality of the mixed milk of a large herd even within so short a time as 48 hours; and until further information on the questions raised by these investigations is forthcoming, it has not been thought desirable to recommend the system adopted by the Durham County Authorities to other Authorities as affording them adequate security against the mischance of instituting proceedings against innocent persons.

Employment of Agents in Sampling.—An effort has been made during the year to prepare the way for the collection in the future of more precise information than has hitherto been available as to the methods generally adopted in purchasing samples. This has been rendered necessary by the obscurity involved in the present uncertainty as to the real meaning of the returns showing the results of analysis.

A comparatively high percentage of adulteration in any district may mean either that the practice of adulteration is more prevalent there than elsewhere, or that the methods adopted by the inspectors of that district are better calculated to detect any adulteration that is going on, than those of other inspectors. Conversely a low percentage of adulteration may be due either to freedom from adulteration or to the inadequacy of the precautions taken to ensure that the samples purchased shall be fairly representative of what is sold to the public. It is, therefore, impossible to infer from the number of samples and the percentage of adulteration alone, what is the position of any district with regard to adulteration. A third factor is required before any conclusion can be drawn, and this factor is definite information as to the character of the methods of sampling.

In some districts it is the invariable practice to employ a suitable agent to purchase samples for the inspectors. In others, all samples have been purchased by the inspectors in person. But, in the majority of districts, no record of the occasions on which agents are employed is kept, and the only information available as to the methods of sampling is that agents are " occasionally " or " frequently " employed.

It has now been arranged with many Local Authorities that a record shall be kept of all occasions on which agents are employed to purchase a sample for an inspector. Such a record will not furnish all the information which might be desirable. There are many other precautions adopted in addition to the employment of agents by skilled sampling officers, a record of which it would not be possible to keep. But a knowledge of the number of occasions on which agents have been employed will enable the Board to draw a fairly correct inference as to the effectiveness of the manner in which samples are taken. And this inference, together with the figures obtained from the returns of the Public Analysts, will enable them to form a very fair comparison of the district of one Local Authority with another.

The following incident may be mentioned as showing the necessity for systematic sampling. The sampling officer of one of the districts of a London Borough was ill for some days previous to the 9th June, 1903, on which day his absence from duty was reported to the Health Committee and thus became publicly known. About the same time the Inspector was able to resume work, and on the afternoon of the 11th and early morning of the 12th he took twenty-two samples of milk. Of these, no fewer than twelve were unfavourably reported upon. Five were inferior, water had been added to four, and from three fat had been abstracted. The percentage unfavourably reported on was therefore 54·5, whereas the average percentage was 21·7.

The practice of taking samples without formalities, in order to obtain information as to what persons are contravening the Acts, with a view to further sampling and prosecutions, was referred to in the Report of the Intelligence Division for 1902, and it was pointed out that the practice afforded an effective and easy means of testing the food supply of a district without giving unnecessary offence to shop-keepers.

The practical advantages, and also the technical difficulties, attaching to this system have been fully discussed by the Board's Inspectors with the officials of numerous Local Authorities, and there appears to be a general inclination on their part to adopt or extend the practice in their districts so far as circumstances allow.

COMPULSORY NOTIFICATION OF CONSUMPTION.

Dr. Holmboe, of Christiania, contributes a paper to the September number of *Monthly Publication of the Central International Bureau for the Prevention of Consumption*, which he read at the Conference at Copenhagen last May, on the subject of the compulsory notification of consumption, which has been in force in Norway since May 8th, 1900. When a physician for the first time attends a case of tuberculosis ' where isolation is necessary,' he is obliged to give notice of the case to the president of the (local) Health Commission, who in Norway is always a physician. He has also to report to the same official when a death caused by such a disease occurs in his practice. A report to the Health Commission can be ordered by the municipal authorities, with the consent of the Government, when a patient changes his address. The statistics of the new law for the first year are now complete, and they show notification of 10,944 cases in 1901, of which 10,086 were of lung tuberculosis. It has been quite exceptional to find in the reports of the district physicians any mention of unpleasantness caused to the patients by the notifications, and Dr. Holmboe declares, as the result of Norwegian experience: (1) that the introduction of compulsory notification is desirable in order to combat tuberculosis as an infectious disease, and should be introduced wherever conditions allow. (2) That it should embrace all cases in which isolation is necessary, all cases of death caused by tuberculosis, and all changes of dwelling when such declaration would not be attended with too great difficulties. (3) That experience has shown that compulsory notification, if judiciously carried out with the aid of the sanitary authorities, need by no means come into conflict with humane principles.

THE PRODUCTION AND CONSUMPTION OF MEAT AND DAIRY PRODUCTS.

At a meeting of the Royal Statistical Society, on June 21st, Mr. R. H. Rew summarized the conclusions of the Committee on both branches of their inquiry. They suggested that the average consumption per head in this country was, of meat 121·8 lbs., of milk 15 gallons, of cheese 10½ lbs., and of butter 18½ lbs. The meat included 56·8 lbs. of beef and veal, 27½ lbs. of mutton and lamb, and 36·8 lbs. of bacon and pork, but these quantities did not supply all the carnivorous demands of the population, as poultry, game, and rabbits, as well as what butchers termed the "fifth quarter," were not included. In the case of milk, allowance should be made for the consumption of separated or skim milk, and also for condensed milk, neither of which was included in the average of 15 galloms. Reference was made to previous estimates, and it was suggested that the home production, both of meat and milk, had increased in recent years, though by no means sufficiently to keep pace with the growth of population. Some figures representing the estimated consumption in certain European countries, in the United States, and in Australia, were given, and as the result of the comparison Mr. Rew observed that we appear to be well ahead of other European nations in meat consumption, but appreciably behind our American cousins, and remarkably less carnivorous than our Australian brethren. In consumption of milk we have nothing to boast of, but we still retain a predilection for cheese, which is about equally shared with the Dutch. As regards butter, we may claim to eat with moderation. In conclusion, Mr. Rew suggested that the relative consumption of the different articles of food by the various peoples of the world was a subject with regard to which the data were very imperfect, and one which might well engage the further attention of statisticians.

Replies showed that the average annual yield of the cows actually enumerated, that is, including cows and heifers in milk and in calf, was 475 gallons, while the average annual yield per cow stated to have been milked was 535 gallons, the herds included in the two statements being substantially, but not precisely, the same. The non-milk-producing cows formed a larger proportion of the total stock than in herds for which returns are available, and it appeared, after making deduction for calf rearing, that the average annual yield per cow and heifer for Great Britain could not be put higher than 430 gallons. Returns from Ireland were too scanty to enable any reliable estimates to be formed concerning that country, but an estimate by the late Mr. Coyne, in his "Report on the Agricultural Statistics of Ireland for 1902," placed the annual average yield per cow at 400 gallons.

Adopting this estimate, there resulted an annual average yield of 420 gallons for the United Kingdom, and the average annual total production of milk then stands .—

Average number of cows and heifers annually ennmerated	4,103,000
Estimated average yield	420 gallons
Total production of available milk per annum...	1,723,000,000 gallons
Average population of United Kingdom for five years ending 31st May, 1908	41,338,000

Hence milk available for consumption=nearly 42 gallons per head.

Determination of the relative proportions of the total milk supply consumed as milk, butter, and cheese respectively was beset with difficulties, since no figures were obtainable from the side of the producers. Turning to returns of household consumption, and comparing those described in the Committee's Second Report with those of the Board of Trade inquiry, it was estimated that the average annual consumption of home-produced butter and cheese respectively was 3·7 lbs. and 8·7 lbs. Hence the annual consumption of home-produced butter was 3,211,000 cwts., and of home-produced cheese 1,366,000 cwts.

Converting hundredweights of butter and cheese into millions, at the rates respectively of 1 cwt. of butter=2,352 gallons and 1 cwt. of cheese = 1,148 gallons, the final results obtained were .—

	Millions of Gallons.
Consumed as milk	620
,, ,, cheese	153
,, ,, butter	944
,, ,, condensed milk, &c.	6

SEWAGE EFFLUENT STANDARD.—Dr. Dunbar, of Hamburg, in a paper read before the Sanitary Institute Congress at Glasgow, made the following statement of conclusions :—

The absolute figures obtained even by the best methods, of determining putrescible matter in sewage, do not in all cases give definite indications as to the putrescibility of any given sample. Effluents of purification works may present a most satisfactory character, and yet, under certain circumstances, contain as large, or even larger, quantities of either organic carbon, organic nitrogen, and albuminoid ammonia ; as high an oxygen absorption and loss of ignition as other samples of crude sewage which are in a high degree liable to undergo putrefaction. We should, therefore, give up the attempt to find a standard of general applicability based on absolute figures.

A far safer judgment as to the putrescibility of effluents can be obtained by calculating the percentage of purification effected. Simple methods like Kubel's oxygen absorption test give results entirely sufficient for wants of practice if used only for calculating the percentage of reduction. The analytical determinations spoken of are not needed in all cases. The requirement that all effluents should be absolutely non-putrescible needs only to be made where the river presents most unfavourable conditions, or where the river districts are densely populated. In many cases it will be sufficient to require only that all coarser suspended matter be removed from the sewage. In other instances, all suspended matter, including finer particles, should be removed as efficiently as possible. In other cases, again, the authorities will have to insist not only on the removal of the entire suspended matter, but also on a reduction of between 40 to 50 per cent of oxygen absorbed by the dissolved impurities, the determination being made after filtering the samples ; and there will certainly be such cases, too, where it must be stipulated that the effluents are limpid and entirely non-putrescible.

It would be desirable that leading men in Britain and Germany, where the great questions of river pollution and sewage purification are at present being discussed more than ever before, should come to an understanding to carry out the examination of sewage on the same lines. In such case the large amount of analytical work carried out in both countries every day would lead to comparable results, and progress might be accelerated by mutual labour and interchange of ideas.

THE RELATION OF TEMPERATURE TO THE KEEPING PROPERTY OF MILK.*

By H. W. CONN.

This bulletin emphasizes the importance of low temperatures in keeping milk. In an experiment referred to as an extreme case, the bacteria in milk multiplied 5-fold in 24 hours when the temperature was 50° F., and 750-fold in the same time when the temperature was 70°. Milk kept at 95° curdled in 18 hours, at 70° in 48 hours, and at 50° in 148 hours. So far as the keeping property of milk is concerned, low temperature is considered of more importance than cleanliness.

In milk kept at 95° the species developing most rapidly is the undesirable one known as *Bacillus lactis aerogenes*. At a temperature of 70° this species develops relatively less rapidly in the majority of cases than *B. lactis acidi*, which latter is very desirable in both cream and cheese ripening.

"The bacteria in milk kept at 50° increase slowly, and later consist of very few lactic organisms, but of miscellaneous types, including many forms that render the milk unwholesome. These bacteria continue to grow slowly day after day, but the milk keeps sweet because the lactic organisms do not develop abundantly. Such milk in the course of time becomes far more unwholesome than sour milk, since it is filled with organisms that tend to produce putrefaction. . . .

"Although the temperature of 50° is to be emphatically recommended to the dairyman for the purpose of keeping his milk sweet and in proper condition for market, he must especially be on his guard against the feeling that milk which is several days old is proper for market, even though it is still sweet and has not curdled. Quite the reverse is the case. Old milk is never wholesome, even though it has been kept at a temperature of 50° and still remains sweet and uncurdled. This very considerably modifies some of our previous ideas concerning milk, for it has been generally believed that so long as the milk remains sweet, it is in good condition for use. Quite the contrary is the case, if it has been kept at a temperature of 50° or in this vicinity. It is not unlikely that it is this fact that leads to some of the cases of ice-cream poisoning so common in summer. The cream is kept at a low temperature for several days, until a considerable quantity has accumulated, or a demand has come for ice-cream, and when made into ice-cream it is filled with bacteria in great numbers and of a suspicious character."

Effect of Food Preservatives on Health.—Experiments are now being carried on at Washington to determine the effect on the consumer of taking food preserved with benzoate of soda, salicylate of soda, sulphurous acid, and sulphites. The investigations are in charge of Dr. H. W. Wiley, the chief of the Bureau of Chemistry, who so successfully carried out the experiments on his "poison squad," which proved beyond question that borax and boric acid must be classed as injurious preservatives.

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* *Connecticut Storrs Sta. Bul.* 26,—*Exp. Stat. Rec.*

THE AUSTRALASIAN COMMONWEALTH QUARANTINE CONFERENCE.

A CONFERENCE of heads of the Health Departments of the several States of the Commonwealth has been sitting in Melbourne to submit for the consideration of the Commonwealth Government suggestions as to the provisions to be introduced in a Bill dealing with the question of quarantine. The States were represented as follows: New South Wales by Dr. J. Ashburton Thompson, Queensland by Dr. B. Burnett Ham, South Australia by Dr. W. Ramsay Smith, Tasmania by Dr. J. S. C. Elkington, Victoria by Dr. D. Astley Gresswell, and Western Australia by Dr. Lovegrove.

The conference urged the Commonwealth Government to take over the administration of quarantine without delay, and recommended that the Commonwealth Quarantine Executive should consist of a Director-general of quarantine, with a salary of not less than £1800 a year, removable from his office only by a vote of both Houses; an Assistant Director-general of quarantine; Deputy Directors-general of quarantine in the several States; and Port Health Officers; the Deputy Directors-general to consist of the permanent heads of the Departments of Public Health in each State, who should receive no remuneration from the Commonwealth Government, but who should take their instructions from the Director-general, and should, in turn, exercise control over the Port Health Officers in their own State.

The provisions suggested by the conference for inclusion in the Quarantine Act cover those already existing in the Acts of the different States, but go beyond them in some important particulars. The list of quarantinable diseases is to include small-pox, plague, cholera, yellow fever, typhus fever, leprosy, and such others as the Governor-General may from time to time notify by proclamation. It is proposed that medical quarantine agents should be appointed when desirable at any port in a British colony in close relation with the Commonwealth to issue certificates and bills of health to vessels proceeding to the Commonwealth. Provision is to be made for the proclamation of certain ports of entry, and certain classes of vessels would be required to touch first at such ports on entering the Commonwealth. Inspecting staffs would be stationed at such ports.

Inter-State traffic by land and sea is to be subjected to such control as may be necessary to prevent the passage of infection from one State to another. The return to their native countries of persons affected with leprosy or other proclaimed quarantinable disease is provided for. The Governor-General should have power to prohibit the importation of persons, animals, or goods from proclaimed places. Provisions for requiring vessels trading between Commonwealth ports to carry a Surgeon when conveying more than a certain number of passengers, for subjecting vessels periodically to processes for the destruction of vermin, and for requiring vessels to carry prescribed disinfecting plants were inserted. The conference recommended that the Commonwealth should allow the use of quarantine stations or grounds to State authorities for the quarantining of cases of such disease as small-pox, which might arise among the resident population, costs of transport to and detention in quarantine stations of such cases being met by the States.

On the question of intra-State quarantine there was a difference of opinion among the members of the conference. By a majority, a resolution was carried affirming the desirability of the Governor-General having power of taking full control over measures for the suppression of outbreaks of quarantinable disease in any State, should such outbreaks threaten to become a danger to other States.

The conference submitted recommendations dealing with compulsory vaccination, vital statistics, adulteration of food, and some special questions which had been submitted to it. It was emphatically affirmed that vaccination and re-vaccination afforded to the individual the only defence against small-pox, and that their compulsory enforcement throughout the Commonwealth would render quarantine as against small-pox unnecessary. The conference was of opinion that an Act providing for compulsory vaccination and re-vaccination would be most beneficial to the Commonwealth. On the question of restricting the admission of consumptives, the conference considered that quarantining measurse at the port of arrival would be impracticable.

THE PREVENTION AND TREATMENT OF CANCER.

We have received the following communication from the committee of the Liverpool Cancer Research, with a request that Medical Officers may find means to draw the attention of the inhabitants of their districts to this important matter:—

Cancer Research Laboratory, The University,
Liverpool, *July*, 1904.

In view of the increasing prevalence of cancer, the committee of the Liverpool Cancer Research deem it their duty to call attention to what may be done to combat this increase. No specific cure for cancer is yet known; but, as with consumption, the earlier the treatment is commenced the greater is the chance for its success. Unfortunately a large number of people put off seeking the advice of their doctor instead of going to him immediately they notice anything wrong. It may be pointed out that certain organs are more often affected than others. In men, cancer of the gullet, stomach, and intestines; in women, cancer of the breast and the womb, account for about two-thirds of all cases of cancer. There are of course, many other very slight ailments of these organs. The committee feel that they cannot too strongly state how important it is that the disease should be recognized at the earliest possible moment. This recognition can only be attained by the patient going to his or her doctor for examination at the very beginning of illness.

Pathogenic Importance of Hyphomycetes.—F. Schilling, of Leipsic, thinks that this group of fungi has been rather neglected by pathologists. He describes the " delicatessen stores " as hotbeds of these forms of fungus growth, and remarks that the advantages of " stale bread " are frequently counterbalanced by the colonies of fungi proliferating on the bread. He reviews the various works on the subject of hyphomycetes, and relates some cases of digestive disturbances due to their action.—*Archiv. f. Verdauungs-Krankheiten, Berlin*, x. 3.

LAW REPORTS.

HIGH COURT OF JUSTICE.

KING'S BENCH DIVISION.

July 13th, 1904.

BEFORE LORD ALVERSTONE, L.C.J., KENNEDY AND PHILLIMORE, JJ.

MORRIS *v.* BEAL.

Factory and Worshop Act, 1901. Underground Bakehouse—Structural Alterations—Covenant to pay outgoings—Jurisdiction of Magistrate—Lease nearly expired.

A magistrate has no jurisdiction to make an order under Sub-section 8 *of Section* 101 *of the Factory and Workshop Act*, 1901, *requiring the owner to pay part of the structural alterations in order to obtain a certificate to use the premises as an underground bakehouse if the tenant has covenanted to pay all outgoings, and this is so independently of the date of the lease and the length of the term.*

This was a case stated by a metropolitan magistrate upon the hearing of a complaint by the tenant under Section 101, Sub-section (8) of the Factory and Workshop Act, 1901. The magistrate had ordered that the owner should pay £70 in respect of a sum of £133 17s. 6d. paid by the tenant to carry out certain structural alterations required in order to obtain a certificate to use the leased premises as an underground bakehouse. The lease was for a term of twenty-one years from December 25th, 1885. It contained a covenant by the lessee to pay "all existing and future taxes, rates, assessments and outgoings, whether parliamentary, parochial, or otherwise, for the time being payable either by the landlord or tenant in respect of the said premises except landlord's property tax." It was sought to distinguish this case from *Goldstein* v. *Hollingsworth* (*Public Health*, vol. xvi, p. 54) on the ground that the lease was for a longer period and had nearly expired.

Barnard Lailey appeared for the appellant; *Danckwerts, K.C.*, and *Hutton* for the respondents.

The court allowed the appeal, holding that this case was covered by *Goldstein* v. *Hollingsworth* (supra), and that a magistrate had no jurisdiction under the above sub-section (8) to determine what is just and equitable in cases where there is in the lease an express covenant by the tenant to pay all outgoings. The covenant must be construed without regard to the date at which it was entered into.

BELFAST COUNTY COURT

September 23rd, 1904.

BEFORE THE RECORDER OF BELFAST.

Sale of Food and Drugs Act, 1875, Section 6. Ginger Wine—Addition of Salicylic Acid.

The addition of Salicylic Acid to Ginger Wine in order to preserve it was held to be an adulteration, as the acid was not required for the production thereof.

This was an appeal against the decision of the magistrates at the Belfast Petty Sessions imposing a fine of 20s. for selling ginger wine containing

7·2 gr. per pint of salicylic acid. The prosecution had been instituted by the inspector, and was brought under Section 6 of the Food and Drugs Act, which prescribed a penalty for the adulteration of any article of food, unless the ingredient used was not injurious to health, and was required for the production or preparation of the said food as an article of commerce. It was contended that ginger wine was known for upwards of a century, and that salicylic acid was quite a modern preparation, and could not, therefore, be essential to the manufacture of the drink; that the larger manufacturers did not use it at all, and that it was injurious. For the defence it was alleged that alcohol or some similar ingredient was necessary to prevent refermentation in the wine, and that in the quantities used it was not injurious.

Mr. Barklie, City Analyst, proved that there were 7·2 gr. of salicylic acid per pint and 12·2 per cent of alcohol, which latter would have been quite sufficient to preserve it; he said he had given evidence in a similar case in the County Tyrone, where 8·2 gr. per pint had been found, and that the case had been dismissed.

Dr. Henry O'Neill, a member of the consulting staff of the Royal Victoria Hospital, said he had been twenty-seven years practising medicine and surgery, and before that had had practical experience of the manufacture, use, and sale of ginger wine. He read out formulæ for its preparation published in Muspratt's *Dictionary of Chemistry*, 1860, and also in the *Chemist and Druggist* of 1890 by Peter MacEwan. It contained 5 to 12 per cent of alcohol produced by fermentation during its manufacture, and this was a sufficient preservative. Salicylic acid was a dangerous drug, with a definite dosage and well-known physiological action. Dr. O'Neill described in detail its preparation and its action, and said he considered it especially dangerous when given in any quantity to persons suffering from inflammation of the heart, liver, or kidneys, and that it was not necessary to add any preservative to ginger wine, which naturally contained as much alcohol as claret, porter, or ale, or even more.

Dr. Stanley B. Coates and Dr. Torrens (Belfast) both agreed with Dr. O'Neill.

For the appellant's case, Mr. Charles Huxtable said he was a pharmaceutical and analytical chemist of London, and had experience of the manufacture of ginger wine for the last four years; it was absolutely necessary to have a preservative for ginger wine; in the proportion of 7·2 gr. per pint salicylic acid would be quite harmless, and less than this quantity was not effective as a preservative; ginger wine would not produce 16 to 20 per cent of alcohol in fermentation; proof spirit was added; that would not be sufficient as a preservative. Counsel for the prosecution quoted the evidence of Dr. E. H. Starling in the report of the Royal Commission on Food and Drugs, 1901, that salicylic acid had the tendency of preventing the action of the gastric juices and retarding digestion; but witness said he had carried out experiments on himself, and found no such effect upon his digestive organs as had been suggested.

Sir William Whitla, M.D., Professor of Materia Medica, Queen's College, Belfast, said the pharmacopœial dose of salicylic acid was 5 gr. to 20 gr., but it was not unusual to give up to 120 gr. in a day. Anyone taking 120 gr. of salicylic acid through the wine into his system would also have to take half a stone of sugar; he did not believe that in small doses there was a particle of evidence to show that it did harm. He believed the statements continually made in books about salicylic acid and its effects upon the heart and kidneys arose at the time when it was impossible to get the drug pure; the heart depression was produced by the impurities and not by the drug; with the present methods of purification, the cardiac depression was not found even when enormous doses were given. He thought salicylic acid preferable as a preservative to alcohol. He had heard that it was being introduced into light beer, claret, and other light wines; but did not think that if a man took a couple of bottles of beer, a bottle of cider, and a bottle of claret he would absorb 30 gr. of the acid; and that if he did, he thought it would do him less harm than the alcohol. Barthellot, Dr. J. S. Cameron, Professor Corfield, Dr. E. H. Starling, Dr. McLagan, and Sir T. Stevenson, were all quoted to show that the drug was considered dangerous as a constituent of food, but witness maintained his opinion that small doses of the drug were quite harmless; he would not say that there would be a temptation to use an impure acid if it were cheaper.

Dr. A. Montgomery (Belfast) gave corroborative evidence.

The **Recorder**, in giving his decision, said that the question resolved itself into whether the drug was necessary, or whether there was any doubt as to whether it was injurious; because if not necessary it should not be introduced; and if injurious it should not be introduced. Ginger wine had existed long before the drug was introduced into it. Was the wine better than it used to be? Having been existent so long without the drug, he could not see how the drug was necessary, and, if not required, it appeared to him that it ought not to be introduced into the wine. He therefore confirmed the decision of the magistrates in imposing the fine.

Unsound Meat Prosecutions.—At the meeting of the Association of Municipal Corporations, on October 19th, the Town Clerk of Liverpool called attention to certain amendments of Section 116 of the Public Health Act, 1875, proposed by the National Federation of Meat Traders in an interview with the President of the Local Government Board, one of the objects of which was to shift from the owner or trader the onus at present imposed on him of proving that the meat in respect of which a prosecution was instituted was not intended for human food, and to place the burden of proof on the local authority or prosecuting inspector. It was agreed that the matter be referred to the council for consideration, and, if deemed expedient, that they should take action in opposition to the suggested amendment of the law.

Water Supplies in Korea.—The special correspondent of the *Morning Post*, in describing the difficulties encountered by the Japanese army, refers to the dangerous condition of the water. He describes it thus: "All round us was rushing water, but according to those who know this country, there was not a drop to drink unless one would court dysentery, typhoid and other complaints. In no part of the world is the water supply more generally polluted than it is in Korea, and it is dangerous to drink of it even when it is seen babbling, deliciously cold and limpid, down the sandy stream beds. Indeed, here the most pellucid and innocent-looking rivulets are often the most treacherous. The water pollution is due to the peculiar method of fertilizing the land employed by the people, so that all water that has passed through cultivated ground is contaminated. Even if one takes the precaution only to drink of streams that flow down the hillsides above the cultivation, one is not safe, for the Koreans bury all their dead on the high ground. The results of these customs in a fully cultivated and rather densely-inhabited country may be imagined.

REVIEWS.

Health and Municipal Building with Large Open Spaces. With special reference to the contrasts between town and country, flats and single dwellings, together with a sketch of the development of Municipal Building in Berlin and its suburbs. By Th. Oehmcke, Regierungs und Baurat a. D. in Gr.—Lichterfelde bei Berlin. Published by Julius Springer (1904). Price 2s.

This is an interesting little book of 69 pages, and containing four photographs of suburbs of Berlin, together with a map of the suburban railway system, and plans.

In the introduction the author gives a short statement showing that, owing to the enormous development of various industries during the last century, there has been a tendency for the people to migrate from the country into the towns, leading to a comparatively sudden and rapid increase of their size. He shows that this has taken place in all civilized countries, but that Germany succumbed to the influence somewhat later than the others. This increase in the towns has brought with it in Germany, as in England, all the difficulties and evils attending the congregation of large numbers of people on small space.

The book is divided into three chapters, and each of these is sub-divided and classified. The whole subject is thus treated on a definite plan

Chapter I deals with the contrast between town and country in regard to health, both moral and physical. He shows by comparative statistics—corrected for age and sex distribution—that health is much better in the open country than in towns, a fact which has long been a truism in England. In dealing with this subject he deals in detail with the causes of this difference, entering into those subjects, such as climate, air, light, etc., which exert a physical influence, as well as those which exert an influence on the mental and moral health of the people.

Chapter II comes in natural order of sequence, and deals with the subject from the point of the individual, *viz.*, the contrasts between block-dwellings and flats (Stockwerkhaus) and houses for single families. He gives many cogent reasons why the single family house with proper air space is superior to the large block dwellings, the only points in favour of the latter being economy of space, and in certain cases of administration. He states (page 32) that "In England, dwelling in a single family house has always remained the fixed mode of living, and that this custom has been transplanted into North America. During the last century, for the first time, inconsiderable exceptions to this custom have occurred in England. In Germany the single family house was the usual thing up to the sixteenth century." Owing to this circumstance, and to the local self-government in England, the author attributes the facilities which we possess for making bye-laws, etc., which provide for air space round our small houses, and the continuance of these as the most desired form of residence here. In Germany, on the other hand, since the sixteenth century the inhabitants have come to look upon the many-storied block or flat system of dwelling as the natural one, and for this reason he does not think there is much chance of seeing the single family house receive general adoption in Germany at present. Public opinion will require educating on this point there, and in this connection the author might study with advantage our Garden City projects, which aim at the building of towns with a limited number of houses at a prescribed distance from other houses, with an ample breadth of streets, and large gardens allotted to each house, etc. The author does not seem to be acquainted with this latest development of town-building in England.

Chapter III. This deals with the subject of the provision of ample space in laying out the land for building cities. The first section deals with the necessity of large spaces round houses, and the second section with the means for carrying this out, illustrated by a description of the housing problem as it occurs in Berlin and its suburbs. In doing this the density of population, the building regulations, growth of suburbs, means of transit, and kindred subjects in Berlin are dealt with.

The author is fully alive to the value of parks and open spaces, and on page 61, *et seq.*, will be found a very interesting comparison of these open spaces in Berlin and London, to the advantage of the latter, notwithstanding the praiseworthy activity of Berlin in this matter during the last ten years.

He concludes this little book by several quotations from well known hygienists on the value of health.

On the whole the book is a valuable contribution to the literature of this subject, and brings together into a small space the various matters bearing on buildings and air space.

PRACTICAL CHEMISTRY, INCLUDING SIMPLE VOLUMETRIC ANALYSIS AND TOXICOLOGY. By P. A. Ellis Richards, F.I.C., Prof. of Chemistry at Queen's College, London; Public Analyst City of Westminster; Assistant Lecturer on Chemistry and Toxicology Charing Cross Hospital Medical School. Pp. 136. Price 3/-. London: Baillière, Tindall & Cox. 1904.

This book is intended to provide an introduction to qualitative and quantitative analyses, and is especially adapted to meet the requirements of the preliminary scientific examination of the University of London and of the conjoint Boards. It is one of the most clearly-expressed books of the kind we have come across, and can be confidently recommended to teachers and students of chemistry.

THE ANNUAL REPORT OF THE METROPOLITAN ASYLUMS BOARD, for the Year 1903.

During 1903, among the cases treated in the M. A. B. Hospitals, there was a death-rate for scarlet fever of 3·1 per cent; for diphtheria, 9·6 per cent; for typhoid fever, 15·3 per cent; for typhus fever, 21 per cent, and for small-pox 3·3 per cent. The number of cases of infectious disease admissible to the Board's hospitals and classified as such was, in 1901, 35,311; in 1902, 40,046; in 1903, 23,087. For this falling off the abatement of the small-pox epidemic was largely responsible, the number of cases of the disease being, in 1901, 1,700; in 1902, 7,796; in 1903, 416. Other diseases also show a considerable decline. Thus, the number of cases of scarlet fever in the three years was 18,381, 18,252, and 12,531 respectively; of diphtheria, 11,968, 10,538, and 7,582; of typhoid fever, 3,194, 3,407, and 2,339. In typhus fever alone was there an increase to 22, the highest number since 1893. With regard to diphtheria, an encouraging feature of more importance than the small number of cases, is the continued decrease in the rate of mortality since the introduction of the antitoxin treatment. Before this the mortality varied from between 30 and 40 per cent; in 1895, the year in which the antitoxin treatment was introduced, it fell to 22·8. In 1903 it was only 9·69 per cent, though many cases are brought to the hospital too late for treatment. The figures showing the day of the disease on which the treatment was first used are even more striking. At the Brook Hospital, between 1897 and 1903, 187 cases were treated with antitoxin on the first day of the disease without a single death; 1,186 on the second day, with 5·4 and 5 per cent deaths in the first two years of the series respectively, since which the rate has been about 4 per cent. In cases treated after the second day the mortality is much higher, ranging up to and sometimes exceeding 20 per cent. An adverse report is made on Finsen's treatment of small-pox by excluding all but red light. In a small ward in which the treatment was carried out the gloom was believed to have a deleterious influence on the general condition of the patients.

FOOD INSPECTION AND ANALYSIS. By Albert E. Leach, S.B. Large 8vo, xiv. 787 pages, 120 figures, 40 full-page half-tones. Cloth, 31s. 6d. net. New York: John Wiley & Sons. London: Chapman & Hall, Ltd., 1904.

Food inspection and examination is every year receiving more of the attention it merits, and the public at large are slowly but surely becoming educated to a due appreciation of its vital importance to the community as a whole. The advisability of adopting methods of prevention rather than cure in the case of disease naturally appeals strongly to the educated mind, and in the supply of unadulterated and pure food one step at any rate has been taken towards the desired end. In America greater progress has been made in this direction than is the case in England, and notably in Massachusetts a very full and complete system is in operation. This state, in fact, was one of the earliest to adopt a comprehensive scheme of food and drug inspection, and Mr. Leach, from his position as Analyst to the Massachusetts State Board of Health, may with justice claim considerable experience in the subject he writes upon. The book itself covers a fairly wide field, and in addition to sections devoted to milk, butter, flesh foods, tea, coffee, cocoa, etc., includes valuable data on preservatives, spices, tinned vegetables, and artificial food colours.

The opening chapter deals with the taking of samples by the inspectors, the transmission of them to the analyst, and the further proceedings necessary when a prosecution is instituted. We note here the precautions adopted in Massachusetts in reference to labelling and transfer of samples, including an ingenious arrangement of lockers with separate keys for each inspector, to prevent any possible tampering with the articles after purchase. The importance of this matter is evidently fully recognized, and the system appears to work well.

The author then proceeds to discuss the laboratory of the analyst and its equipment, and gives many useful hints on apparatus and reagents required, which should prove useful to anyone furnishing an analytical laboratory for the first time, although it must be admitted that a chemist with practical experience would probably be inclined to modify certain of the suggestions here made, to meet his own individual requirements. Food, with special reference to its nutritive value, is next dealt with, and the classification of the various proteids and carbohydrates is clearly given, together with the usual precipitants and tests for these substances.

In the chapter on general analytical methods many useful hints are given, and the importance of microscopical examination applied to food analysis is strongly emphasized. More actual information, as the author states, can frequently be gained by the practised eye from a judicious use of the microscope than can be afforded in many cases from ordinary chemical analysis. The characteristic features of vegetable foods under the microscope are discussed at some length, and the reagents usually employed for staining and mounting purposes are fully described. A very valuable addition to its usefulness is made by the inclusion at the end of the book of a series of photomicrographs in half-tone, of starches, spices, barks, etc. These have been made in the author's own laboratory, are clearly printed, and show a marked improvement on the usual diagrams that accompany books of this character.

Milk naturally has a considerable space allotted to it, and all the ordinary methods for the estimation of fat, lactose, and proteids are fully described. A little more space might with advantage have been given to prepared milk foods, a subject that is every day increasing in importance with the number of fresh preparations constantly placed on the market. The detection of preservatives and artificial colouring matters in milk is however given at considerable length, and several of the suggestions in this section will be found most useful to the public analyst.

A special chapter is devoted to spices, their constitution, and the detection of their common adulterants. Here, as elsewhere in the book, the diagrams that are liberally distributed amidst the letterpress are exceedingly good and very clearly drawn. Great care has evidently been taken throughout to bring the subject matter fully up to date, and to facilitate further reference by the reader to the standard works on the various classes of food, a full list of the former is appended to each chapter.

In conclusion we can heartily recommend Mr. Leach's book as eminently suited to fulfil the purpose for which it is intended.

SCARLATINAL INFECTIOUSNESS.

The following letter, addressed to the Editor of the American Medical Association, who had given an account of Drs. Killick Millard and Lauder's papers on the subject, forms an interesting contribution to the discussion :—

"Lauder's two faulty 'systems' of handling scarlet fever, and the experience of Killick Millard, are used as the basis of the editorial. I say faulty 'systems' because they both have to their credit 'return cases.' The conclusions to be drawn from the editorial are, first, that mild cases of scarlet fever should be protected from severe and complicated cases; second, that in the absence of complications such as inflammation of mucous membrane and abscesses, a child can be turned loose with safety to others though the skin is still peeling; third, that the infectiousness of the desquamating skin is exaggerated. The editorial is interesting as a matter of current news, but decidedly harmful if accepted as a piece of authoritative advice as to the manner of managing scarlet fever.

"With the first conclusion I have no quarrel. Experience has taught me that some of the complications of severe cases are a menace to persons having the disease in a mild form. This is notably true of the diphtheritic complication. Conclusions two and three can be spoken of under one head. That the danger from the desquamating skin is exaggerated, or that it is safe to remove the restrictions from a scarlet fever patient while there is desquamation, I do not believe. I would have to disregard my own experience to believe this teaching. Furthermore, I do not think the evidence submitted warrants me in accepting such teaching. The comparison of two faulty 'systems' to prove that one 'system' is the right one to follow because it is no worse than the other, hardly merits a serious thought. It is admitted by Lauder that seven 'return cases' of scarlet fever resulted in the 1902 or 'old system,' and a like number in the 1903 or 'new system.' In practical results you will observe the two systems are equally bad. Because one bad practice is no worse than another, is no good reason for advocating the continued existence of either. The conclusion that the 'new system' of hurrying convalescents out to mingle with those susceptible to scarlet fever is better than the 'old system' because it kills no more than the 'old system,' is, to say the least, a poor argument for the new.

The most infectious or contagious period of scarlet fever I believe to be when the rash is at its height, but the time when it is most frequently conveyed to others is during the desquamation period. This is because children, while desquamating and afflicted with other complications, are permitted to mingle with other children. The cast-off skin, I believe, is capable of conveying the disease when carried in clothing, letters and other methods of conveyance. Why should not the skin be charged with infection as well as the mucous membrane? To the eye the manifestation of the disease in the skin is as apparent as elsewhere. What influence makes the skin in these cases harmless, and leaves the mucous membrane a source of danger? The skin is in all probability the major channel through which the infection leaves the body. Reason and experience teach that this cast-off skin contains the element which produces scarlet fever. If a shirt worn becomes infected, why should not the skin, which is a still closer covering, become infected? It is doubtful if there is a practical method of disinfecting the inner or under side of the skin before it is detached.

"You will observe that there were no 'returns' of the disease in the 33 cases of Dr. Lauder, which were 'free from peeling and complications' before restrictions were removed. Would it not be better to take these 33 cases as a source of inspiration, and say unequivocally that all cases of scarlet fever should be isolated until there is freedom from complications and *until desquamation is completed?*

HEMAN SPALDING, M.D.
Chief Medical Inspector, Department of Health."

Chicago, *July* 18*th*, 1904.

THE KING has been graciously pleased to confer the title "Royal" upon the Sanitary Institute.

DEATH OF DR. J. B. RUSSELL.—We regret to have to record the sudden death, in his 67th year, of Dr. James Burn Russell, Medical Member of the Local Government Board of Scotland, and formerly Medical Officer of Health for Glasgow. Dr. Russell was appointed to the latter office in 1872, succeeding Sir William Gairdner, and held the position until 1898, when he was selected as the medical member of the Local Government Board, on which his ripe experience and mature judgment has been of the greatest value. Glasgow owes much to his foresight and breadth of view; in no little measure is it due to Dr. Russell that Glasgow has taken the advanced position among municipalities. He was the author of many valuable reports, papers, lectures, etc., an honorary fellow of the numerous learned societies at home and abroad, and in 1885 the University of Glasgow bestowed upon him the degree of LL.D.

CORRESPONDENCE.

AN AID IN THE TREATMENT OF TUBERCULOSIS.

To the Editor of Public Health.

Sir,

Without wishing to detract for one moment from the value of the open-air treatment of phthisis, I would point out that some further steps are urgently required. Anyone familiar with the after-history of patients discharged from Sanatoria must have noticed the rapid "falling away" in health of many of the most promising cases. Various remedies have been tried with the view of destroying the tubercle bacillus *in situ* by means of inhalations, from pinol to formalin, but the difficulty always confronting investigators has been to find a drug at once strongly bactericidal, and at the same time non-toxic and non-caustic. Such a discovery was foreshadowed by Sir Lauder Brunton in his Croonian lectures of 1889, when he pointed out the likelihood of its being found "in substances having a di-phenyl nucleus, rather than in those containing a single phenyl nucleus."

To many members of the profession a non-toxic bactericide will appear as a contradiction in terms, but yet such a drug is now in the hands of medical men. Cyllin has, as demonstrated by Bousfield, removed 97 per cent of the *B. coli* from a normal intestine without producing any constitutional disturbance; and I have been led to try its effect in a specially prepared form as an inhalant in the treatment of consumption. Used in a molecular state, it has in six cases of phthisis of my own, very greatly diminished the amount of expectoration and the number of *B. tuberculosis* therein contained; it has also markedly liquefied the sputum, reduced the evening temperature to normal, and greatly improved the patients' condition generally; all six patients being old-standing cases of chronic phthisis with cavitation, had, previous to the commencement of the use of cyllin, been steadily going from bad to worse.

I have received confirmation of these results from other medical men, which strengthens the good opinion that I have formed of the value of this new drug in the treatment of tuberculosis.

Yours truly,
Oakdene, W. Charrott Lodwidge, M.R.C.S., L.R.C.P., D.P.H.,
Walton-on-Thames,
Oct. 6th, 1904.

Dr. James Wallace, Medical Officer of Health for Greenock, who had been in practice at Greenock for fifty-four years, and was one of the oldest physicians in Scotland, died recently. Deceased was in his eightieth year. He was the first Medical Officer appointed by Greenock Town Council under the Public Health Act, and took up his duties in 1873.

Enteric Fever and Oysters.—The late Mr. C. I. Elton, Q.C., in his recently published work on Shakespeare, recalls the fact that the first performance of *The Tempest* was delayed by Prince Henry's death, in 1612. The cause of his death and also that of Shakespeare himself, was evidently the "new" fever, but some attributed Prince Henry's malady to oysters.

PROCEEDINGS OF THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTITUTED, 1881. INCORPORATED, 1891.

ANNUAL MEETING.

THE Annual General Meeting of the Incorporated Society of Medical Officers of Health was held at the Offices of the Society, 9, Adelphi Terrace, Strand, London, W.C., on Friday, October 14th, 1904. Present: Drs. John F. J. Sykes, H. E. Armstrong, Arthur Newsholme, H. Meredith Richards, R. A. Dunn, H. Beale Collins, P. Caldwell Smith, Reginald Dudfield, L. F. Bryett, W. A. Bond, H. W. Roberts, F. J. Allan, Nathan Hannah, Oliver Field, G. B. Millson, J. Groves, T. E. Lyon, J. A. N. Brincker, F. E. Fremantle, H. W. G. Macleod, F. Graham Crookshank, E. F. Willoughby, William Butler, J. T. C. Nash, Ebenezer Davis, Herbert Jones, Joseph Priestley, Mr. W. Whitaker, F.R.S. (Members of the Society), and Mr. Chas. Fitzroy Doll, visitor.

Dr. **GROVES** having taken the Chair, it was resolved on the motion of Dr. **DUDFIELD**, seconded by Dr. **ALLAN**, that the Minutes of the last Annual General Meeting having been printed and published in *Public Health*, be taken as read.

INDUCTION OF THE NEW PRESIDENT.—**DR. JOSEPH GROVES** said, "As retiring President I have very much pleasure in calling upon Dr. Sykes to take the Chair." Dr. Groves investing Dr. Sykes with the President's Badge of office, "It is the first time that the transference of the Society's Badge has been made. I wish you a very prosperous year of office."

Dr. J. F. J. **SYKES** in taking the Chair said that he hoped during the year he was to have the honour of holding the Chair the Society would prosper, and that he would do all he could to forward its interests.

Dr. H. E. **ARMSTRONG** said that he had very great pleasure in moving a vote of thanks to the retiring President for the admirable work he had done during the past year. (Hear, hear.) He did not know that the year had been an exceptional one except in regard to a great deal of ordinary business, but it had been a very successful year. During his tenure of office, Dr. Groves had won golden opinions from all his friends for the admirable manner in which he had facilitated the business of the Society. Dr. Groves had attended every meeting of the Society without exception, even travelling as far north as Newcastle-on-Tyne. He (Dr. Armstrong) was sure that the retiring President had gained the approval of every member of the Society by his genial good fellowship and tactful management of the Society's affairs. He had very great pleasure in moving that a hearty vote of thanks be conveyed to Dr. Groves.

Dr. **HERBERT JONES**, in seconding the resolution, said that he should like to add one remark. The year of Dr. Groves' presidency would be notable from the fact that an additional branch of the Society had been formed, and this was due in a great measure to Dr. Groves, who had personally visited Cambridge and taken a great deal of trouble in the matter. (Applause.)

Dr. J. F. J. **SYKES** asked the meeting to carry the vote by acclamation, and said that Dr. Groves would, he was convinced, have every member's goodwill. (Applause.) The resolution having been carried by acclamation, Dr. Sykes addressing the retiring President said, "It is my pleasant duty to convey to you the hearty thanks of this Society for your services as President during the past year. We hope that you may be spared for many long years of useful work."

Dr. GROVES in replying said that he considered it very kind of the meeting to pass the vote of thanks in an unconventional manner. He was not sure, however, that it was a wise thing to unduly thank their Presidents. They expected from them a strict performance of duty which involved a considerable amount of time and attention. It seemed to him, when looking back, to have been a year of progress, and it had been his desire that it should be so at the time they so kindly placed in his care the welfare of the Society. To realize that it had been a year of progress one had only to read the Reports of the Council and of the Editor. Then there was the fact of a new branch of the Society having been formed. He thanked them very much for their kindness, and could say that his heart was in the Society, and he hoped that all the progress of the future would advance its interests. (Applause.)

ANNUAL REPORTS.—The HON. SECRETARY submittedthe Annual Reports of the Hon. Treasurer, Auditors, and Editor, and stated that the same had been published in the October issue of *Public Health.*

Resolved unanimously on the motion of Dr. Butler, seconded by Dr. A. NEWSHOLME, that they be received and adopted *en bloc.*

REPORT OF COUNCIL.—The HON. SECRETARY read the following Report of the Council.

REPORT OF COUNCIL.

Your Council report :—

1. That they have received a letter, signed by Dr. Geo. Turner, Medical Officer of Health of the Transvaal, and by Dr. Chas. Porter, Medical Officer of Health of Johannesburg, drawing attention to the conduct of Dr. W. J. Simpson, in reference to Public Health matters in the Transvaal generally, and to the recent outbreak of plague particularly, but that in view of the fact that this letter, together with the reply by Dr. W. J. Simpson, has already appeared in the Journal, it is proposed to take no further action in the matter.

2. That, in reply to a suggestion received from the Northern Branch, they have given instructions for the Hon. Secs., in cases where resolutions are submitted for consideration to the Branches from the Society, to have the same printed and sent on to the Branch Secretaries in sufficient numbers for distribution to the Members of the several Branches.

3. That they have duly constituted another Branch of the Society, to be called the Eastern Counties Branch, under paragraph 35 of the Articles of Association.

4. That they have received particulars from the Branch Secretaries as to the Election of Presidents of Branches and Branch Representatives on the Council for 1904–5, as follows :—

Branches.	*Presidents*	*Branch Representatives.*
Metropolitan.	Dr. H. W. Roberts, (M.O.H. Met. Boro. Deptford).	Dr. W. A. Bond. Dr. R. K. Brown. Dr. L. T. F. Bryett. Dr. S. Davies. Dr. R. Dudfield. Dr. O. Field. Dr. E. F. McCleary.

Branches.	*Presidents.*	*Branch Representatives.*
Metropolitan—*contd*		Dr. G. Newman. Dr. L. C. Parkes. Dr. P. C. Smith.
Midland.	Dr. J. Howard-Wilkinson (M.O.H. Dudley).	Dr. Bostock Hill. Dr. George Reid.
Northern.	Dr. T. E. Hill. M. O. H. Co. Durham).	Dr. J. Taylor. Dr. Hembrough.
North Western.	Dr. J. B. Wilkinson, (M.O.H. Oldham).	Dr. T. W. H. Garstang. Dr. J. Wheatley.
Yorkshire.	Dr. Scatterty, (M.O.H. Keighley).	Dr. Kaye. Dr. Mitchell Wilson.
West of England and South Wales.	Dr. Eben. Davies, (M.O.H. Swansea).	Dr. Tubb-Thomas. Dr. J. Howard-Jones.
Home Counties.	Dr. Mark Sharman, (M.O.H. Rickmansworth).	Dr. Richards. Dr. Ashby.
Southern.	Dr. A. Stewart-Norman, (M. O. H. Havant).	Dr. W. G. Willoughby. Dr. Lockhart Stephens.
Scottish.	Dr. A. K. Chalmers, (M.O.H. Glasgow).	Dr. J. C. McVail. Dr. Maxwell Ross.
Eastern Counties.	(Not yet Appointed).	Dr. Sinclair Holden. Dr. Cooper Pattin.

5. That they have received, and adopted, your Parliamentary Committee's Report as follows :—

(*A*). That they have carefully considered the 6 Food Adulteration Resolutions passed by the Society on January 8th, 1904, together with the 3 Resolutions passed by the Metropolitan Branch on March 24th, 1904, and have also had before them the recommendations of the Branches relating thereto, and now beg to recommend the Council to suggest to the Society the adoption of the following :—

(*a*). The addition to any food of any substance or substances whatever, not of the nature, quality and substance of the article demanded by the purchaser, should constitute an offence under the Food and Drugs Acts, unless the presence of the same be declared at the time of sale, and the approximate proportions of the substance or substances added.

(*b*). That the Local Government Board and the Board of Agriculture should be respectfully urged to bring in the necessary legislation with a view to giving effect to the recommendations contained in the 1901 Report of the Departmental Committee of the Local Government Board *re* Food Preservatives and Colouring Matters.

(*c*). The addition of any preservative, other than common salt, to any food should constitute an offence under the Food and Drugs Acts, unless the nature and maximum amount of such preservative be declared in a conspicuous manner upon a label or wrapper on or containing the parcel of food purchased, and unless such maximum amount be within the limits laid down for such preservative in the report of the Departmental Committee of the Local Government Board on preservatives and colouring matters in food.

(*d*). No invoice or warranty shall constitute a defence by a retailer for the sale of margarine as butter or without a proper label, unless such invoice or warranty be so worded as to render the giver amenable to the law for the sale of such adulterated article, or liable to be prosecuted for having given a false warranty.

(*e*). That the Local Government Board should have powers of declaring standards for the purpose of the Sale of Food and Drugs Acts of all Foods and Drugs, except dairy produce, similar to the powers conferred by statute on the Board of Agriculture in regard to milk and milk products.

(*f*). Where under Section 18 of the Food and Drugs Act, 1899, an article is sold in an unopened tin or packet duly labelled, but where it appears to the purchaser that after the division of the contents into three parts, as required by Section 14 of the Food and Drugs Act, 1875, and modified by the 1899 Act, the portions so divided are insufficient in bulk or weight for a satisfactory analysis, the purchaser may require to be furnished to him at the same time two or more such tins or packets with similar labels, may mix their contents, and divide the mixed contents as a whole into three parts as required by the Act.

(*g*). That the Council of the Incorporated Society do urge the L. G. B. to promote legislation so as to prevent any defence of Warranty being allowed under the Sale of Food and Drugs Acts in regard to Milk.

(*h*). That the Local Government Board and the Board of Agriculture should be asked to take such steps as will ensure the Dairies, Cowsheds, and Milkshops Orders of 1885, 1886 and 1891 being efficiently carried out by all Sanitary Authorities; and, further, that, outside the Metropolis, provision be made whereby the carrying out of such Orders be transferred to the respective County Councils, wherever default is persistently made by the Sanitary Authorities concerned, as provided for, in the case of the Metropolis, by sections 100–101 of the Public Health (London) Act, 1891.

(*B*). That they have considered the resolutions of the Southern Branch with regard to Fixity of Tenure for Medical Officers of Health, but, in view of the action already taken by the Council and the Society, and having regard to the communications that have recently passed between the Council of the Society and the British Medical Association bearing upon the subject of the introduction of a Public Health (Fixity of Tenure) Bill before Parliament, dealing with the same subject, your Committee make no recommendation to the Council for the present, but will report further in due course, and have, meanwhile, instructed the Hon. Secretaries to reply to the Southern Branch to that effect.

6. That they instructed Dr. Jones, who is a member of the B.M.A. Public Health Committee, to explain to the B.M.A. the position of the Society in regard to Fixity of Tenure for Medical Officers of Health.

7. That they have received, and adopted, the report of the Finance and Journal Committee as follows:—

(*a*). That the balance up to date to the credit of the Society at the Union of London and Smith's Bank is £326 6s. 0d.

(*b*). That, since the last Meeting of the Committee, the Treasurer has paid accounts amounting to £116 0s. 0d., all of which accounts they have examined and approved.

(*c*). That they have examined, and ordered payment of out-standing accounts amounting to £146 5s. 4d.

(*d*). That they have instructed the Hon. Secretaries to take out a Fire Insurance Policy to the extent of £200, on the property of the Society (furniture, books, etc.).

(*e*). That they have arranged for the Annual Dinner and Annual General Meeting to be held on Friday, October 14th, the former at the Trocadero, and the latter at the Society's rooms (9, Adelphi Terrace), where the diagrams required in connection with the President's Address on "Public Health and Architecture" can be more conveniently displayed for inspection.

(*f*). That they have considered the Annual Financial Statement, submitted with the Report of the Treasurer, and are of opinion that the same is highly satisfactory, the balance on the year's work to the credit of the Society being £31 12s. 11d. To the Assets belonging to the Society, as mentioned in the Annual Statement, there are others that might be included in future, *viz.*, bookshelves and furniture, books, the Society's Badge, old stock of publications, etc., the whole valued at £177.

(*g*). That they have instructed the Executive Secretary to obtain, for the use of the Office, certain much-needed requirements, *viz.*, typewriter, card system, copying press, letter files, indiarubber endorsing stamps, letter paper, mimeograph, account headings, day book dissected to show items day by day, paper staple binder, stationery cabinet, copy letter book, bath, brush and requisites, printed postcards, numbering machine for catalogue, etc.

8. That they have again considered the question of the provision of Permanent Office Accommodation for the Society, and have received a Report connected therewith from the Finance and Journal Committee to the following effect:—

Your Finance and Journal Committee, at their Meeting held on July 12th, 1904, inspected a house in Gordon Square (number 57), which they were unanimously of opinion was most suitable for the uses of the Society, provided the terms of the lease would allow of the house being so used, the house having sixteen rooms (arranged on four floors, with a basement) at an Annual Rent of £130, on a repairing lease of nineteen years; that, unfortunately, the Ground Landlord (at the last moment) withdrew the offer of allowing the house to be used other than as a private dwelling, but has since given the Society the option until September 25th, 1904, of taking 68, Russell Square, on a lease for fifteen years at the inclusive annual rent of £150, together with a premium of £300 (to include electric light, and other fixtures, valued at £170); that these premises are about the same size as 57, Gordon Square, have been newly decorated, are fitted up with electric light, and in position (on the business side of Russell Square) are better, so that your Committee are of opinion that the premises should be taken by the Society (the Ground Landlord having given a written consent for the premises to be used by the Incorporated Society of Medical Officers of Health) upon the terms stated, and that the Hon. Secretaries should be instructed to take the premises on behalf of the Society forthwith, and to report the Council's action to the Society afterwards for confirmation, as suggested by the Hon. Secretaries in their Special Report on Permanent Office Accommodation, submitted to the Finance Committee, but subject to the consideration of the terms of the lease by the Hon. Solicitor, and by a Sub-Committee (to consist of Drs. Allan, Millson, R. Dudfield, and the two Hon. Secretaries), being satisfactory.

That, on consideration of the Finance Committee's Report, they agreed to the suggestion contained therein, subject to a license being obtained for the sub-letting of the building, with the exception of one floor and the basement, and subject to a Dilapidation Fund being at once started by the Society; but that, as the condition as to sub-letting part of the premises was not accepted by the lessor, your Council have held another Special Meeting (called for the purpose by the President), at which there was presented by the Hon. Secretaries a Report (which had been previously approved by the Finance and Journal Committee, at their Meeting held October 14th), suggesting the taking of other premises situated at 1, Upper Montague Street, Russell Square, on lease for seven, fourteen, or twenty-one years, at the option of the lessees, at an annual rental of £175, with licenses to: (*a*) Use the premises for the purposes of the Society; (*b*) Sub-let the premises in part, and (*c*) Fix wires, etc., for the purposes of telephonic communication and electric lighting; that they have, in connection with such Report, decided to recommend the Council to adopt it, and to take the premises known as 1, Upper Montague Street, Russell Square, upon the terms, and on the conditions, mentioned therein (*vide* page 3), *viz.*, on lease for seven, fourteen or twenty-one years, at the option of the lessees, at the annual rental of £175, subject to the Hon. Solicitor being satisfied with the lease, and with the three licenses to: (*a*) Use the premises for the purposes of the Society; (*b*) Sub-let the premises in part; (*c*) Fix wires, etc., for the purposes of telephonic communication and electric lighting, such licenses to be duly registered, and the Lessor's Solicitor to be paid a fee not exceeding one guinea for each of such licenses.

9. That they have given the six months' written notice, as required, in connection with the Society's premises, 9, Adelphi Terrace, as and from September quarter, 1904.

10. That they have confirmed the purchase by the Library Committee of the library belonging to the late Dr. W. F. Barry, at a cost of £60, and congratulate the Society upon having obtained such a valuable collection of books to form a nucleus of what is hoped will prove to be a very valuable Public Health Library; and have resolved that no expense be in the future incurred by the Library Committee without the previous sanction of the Finance and Journal Committee.

11. That they recommend that, in view of the increased value of the Journal as an advertising medium, the charge to outsiders should be raised to 1s. 6d. per copy (and 20s. per annum, post free), instead of (as at present) 1s. per copy (and 10s. per annum post free).

12. That they recommend that the subscription to the Society for Associates should be raised from 10s. 6d. to 21s. per annum, bearing in mind the cost of production of the Journal, and the prospective increased financial liabilities of the Society, but that such increase shall not apply to old members; and that, for such a purpose, an Extraordinary Meeting of the Society be called to alter, as may be necessary, the Articles of Association.

13. That they have received, and adopted, the Report of the Library Committee as follows:—

(*a*). That they have received donations of £50 from the Home Counties Branch, and £10 from the Metropolitan Branch for the purchase of books, and trust that other branches will be equally generous.

(*b*). That they have purchased during the year the library of the late Dr. W. F. Barry, of the Local Government Board, for the sum of £60, the library comprising about 1,000 volumes, including some valuable sets of reports.

(*c*). That they have received sets of current and recent former reports from the L.G.B. (by the kindness of Mr. Power, C.B., F.R.S.), from the Sanitary Institute (by the kindness of the Council), and from the Home Office (by the kindness of Dr. Whitelegge, C.B.), and that negotiations for the receipt of the proceedings of other Societies are in progress.

(*d*). That they recommend that a standing paragraph be kept in *Public Health*, inviting donations of books for the library.

(*e*). That the most urgent immediate want of your Committee is sufficient room for books, and, until this is secured, your Committee feel that the Library cannot expand as they trust it will shortly do, when the Society removes to new premises.

(*f*). That they recommend that a sum not exceeding £10 be spent in preparing a card catalogue of books now in hand, and that the librarian be asked to draw up a book plate.

14. That they have received an application for an increased grant from the Northern Branch, and in reply to such application have instructed the Treasurer to pay over to the Branch 10s. per member, instead of 7s. 6d., for the coming Session 1904–5.

15. That they are still considering the by-laws as to new Buildings and Streets in Rural districts, and, on receiving from the Branches their suggestions, will report further to the Society, after the Council's Meeting in November.

16. That they have heard with deep regret, of the death, on July 23rd, 1904, of Sir John Simon, K.C.B., one of the original members, and the first President, of the Society, and have sent a letter of condolence, pointing out therein the indebtedness of the Society to the deceased.

17. That they have considered a reference from the Society, suggesting the practicability and expediency of appointing a Standing Committee, charged with the study of questions of School hygiene, such as those raised by Dr. Lockhart Stephens' paper, and, in connection therewith, have decided to take no further action.

18. That the question of "Return Cases" of scarlet fever and diphtheria is still under consideration by the Special Committee, who are at present considering the proposed Draft Schedules of Enquiries in connection with such cases, and, meanwhile, are prepared to welcome any written suggestions on the subject from any Member of the Society, the Members to be so informed in the Journal.

Resolved on the motion of Dr. GROVES, seconded by Dr. REGINALD DUDFIELD, that the same be received.

Dr. GROVES moved its adoption. He was sure that the report was an excellent one.

Dr. REGINALD DUDFIELD moved that the whole of the report be adopted with the exception of the portion referring to the taking of the new building, which would involve discussion.

Dr. H. E. ARMSTRONG moved that the clauses referring to the Adulteration of Food and Drugs should also be excluded.

Dr. GROVES pointed out that the Food and Drug clauses had been before the Council and the Branches again and again, and were the result of a great deal of work and consideration.

The Hon. Sec. also pointed out that the matter had already been considered by Dr. Armstrong's Branch.

Dr. Newsholme seconded the motion of Dr. Armstrong that the report be approved and adopted except those portions dealing with the taking of the new premises and with the adulteration of food and drugs.

The motion was carried unanimously.

Dr. Newsholme moved that the portion of the report dealing with the Adulteration of Food and Drugs be adopted. It was a subject that had been before the Branches, but, unfortunately, they had not had the assistance of Dr. Armstrong.

Dr. Reginald Dudfield seconded the motion, and it was carried unanimously, Dr. Armstrong saying that he desired to withdraw his opposition, as he now understood that the Branches had considered the matter.

Dr. Groves moved that the recommendation of the Council as to the taking of new premises be adopted. He desired to say that he had been for a long time of opinion that it was absolutely necessary for the Society to have a house.

Dr. Butler seconded the motion.

Dr. Shirley Murphy asked the President when it would be most convenient to take an objection to the scheme. Should it take the form of an amendment, or should they merely vote against the adoption of that portion of the Report? He, personally, desired to record his vote against the taking of new premises.

Dr. Sykes said that it would depend upon the nature of the amendment.

Dr. Shirley Murphy.—" A direct negative."

Dr. Sykes.—" Then I will put it to the meeting that the recommendation of the Council as to the taking of new premises be approved and adopted. On a show of hands the President declared the motion carried with two dissentients.

Dr. Reginald Dudfield asked a question as to how the details connected with the taking of the house were to be settled.

The Hon. Sec. said that the question of the lease was in the hands of the Hon. Solicitor, who was in treaty with the solicitors for the lessors.

Dr. Reginald Dudfield thereupon proposed that the sub-committee which had been appointed to consider the lease of 68, Russell Square, should be re-appointed with power to consider any future details connected with the premises (1, Upper Montague Street, Russell Square) now taken by the Society.

The motion was seconded by Dr. Roberts, and carried unanimously.

The Council Report was then adopted as a whole, and it was agreed that the premises known as 1, Upper Montague Street, Russell Square, be taken on lease upon the terms and on the conditions stated on page 3 of the Hon. Secretary's Special Report, *viz.*:—

For a term of 7, 14, or 21 years, at the option of the lessees, at an annual rental of £175 per annum, subject to the Hon. Solicitor being satisfied with the lease and with the promised licenses to (*a*) use the premises for the Society, and (*b*) sublet the premises in part, and (*c*) fix wires, etc., for the purposes of telephonic communication and electric lighting—such licenses to be duly registered, and the lessor's solicitors to be paid a fee not exceeding one guinea for each of such licenses.

Elections.

The following candidates, having been duly nominated, were ballotted for, and the President declared them to be unanimously elected :—

As Fellows:

Balfour, Andrew, M.D., B.Sc., D.P.H., The Gordon Memorial College, Khartoum, Sudan, Egypt, M.O.H. City of Khartoum.

Brock, Benjamin George, L.R.C.P. and S. Germiston, Transvaal, S.A., M.O.H. Germiston.

Codd, John Alfred, M.D., B.Sc., 57, Darlington Street, Wolverhampton, M.O.H. Heathtown U.D.

Cowburn, Arthur Douglas, M.D., D.P.H., 31, Barkston Gardens, South Kensington, M.O.H., Inner and Middle Temples.

Freer, Horace W., L.R.C.P., M.R.C.S., 7, High Street, Stourbridge, Worcestershire, M.O.H. Stourbridge U.D.

Gimblett, William Henry, M.D., Glanusk, Buckhurst Hill, Essex, M.O.H. Buckhurst Hill U.D.

Handford Henry, M.D., F.R.C.S., D.P.H., 6, Regent Street, Nottingham, M.O.H. Nottinghamshire C.C.

Harris, Alfred, M.B., C.M., Thetford, Norfolk, M.O.H. Thetford U. and R.D.

Hartford, William Henry, L.R.C.P., L.R.C.S., High Street, Christchurch, Hants, M.O.H. Christchurch R.D.

Hemsted, Henry, M.R.C.S., L.S.A., Haverhill, Whitchurch, Hants, M.O.H. Whitchurch R.D.

Hislop, J. A., M.D., L.R.C.P., and S. Lanark, Assistant M.O.H. Lanark County.

Hunter, Walter, M.D., C.M., Bridgeway House, Nottingham, M.O.H. West Bridgford U.D.

Jones, John Arnallt, M.D., L.R.C.P., M.R.C.S., Heathmount, Aberavon, Port Talbot, Glam., M.O.H. Aberavon M.B.

Long, Sydney Herbert, M.D., 37, St. Giles Street, Norwich, M.O.H. Cromer U.D.

Lucas, Herbert, M.R.C.S., L.S.A., Huntingdon, M.O.H. Huntingdon M.B., and Godmanchester M.B.

Lysters, Robert Arthur, B.Sc., M.B., B.Ch., D.P.H., 20, Hunters Road, Birmingham, Assistant M.O.H. Sutton Coldfield.

Mackenzie, Ronald P., M.B., D.P.H., Johannesburg, Joint M.O.H. Rand Plague Committee.

Maidlow, William Henry, M.D., F.R.C.S., Ilminster, Somerset, M.O.H. Ilminster U.D.

Meikle, Robert H., M.B., C.M., Heighington, Darlington, M.O.H. Darlington R.D.

Minchin, P. Dundas, L.R.C.P., and S. Old Croft, Godalming, M.O.H. Godalming M.B.

Peake, Arthur Walton, L.R.C.P., M.R.C.S., 34, Gloucester Road, Bristol, M.O.H. Horfield U.D.

Rayment, Edward W., M.B., C.M., B.Sc., Pewsey, Wilts, M.O.H. Pewsey R.D.

Smith, James W., M.D., Ryton-on-Tyne, M.O.H. Ryton-on-Tyne U.D.

Stock, Philip G., L.R.C.P., M.R.C.S., R.A.M.C., Johannesburg, Assistant M.O.H., Johannesburg.

Woodhead, German Sims, M.A., M.D., F.R.C.P. Edin., 6, Scroope Terrace, Cambridge, M.O.H. Cambridge C.C.

As Members:

Benton, William, L.R.C.P., M.R.C.S., D.P.H., Raymond House, Plashet Road, Upton Park E.

Burtchaell, Charles, B.A., M.B., R.A.M.C., Headquarters S.A.C., Johannesburg.

Clapham, Stanley, C., M.B., B.S., D.P.H., Western Fever Hospital, Fulham, N.W.

Coplans, Meyer, M.D., D.P.H., Stroud, Glos.

Freeman, Ernest Carrick, L.R.C.P., M.R.C.S., D.P.H., R.A.M.C., 3, Trinity Street, Colchester.

Jackson, Rodert William Henry, B.A., M.D., D.P.H., R.A.M.C., Cork Barracks, Cork.

As Associates:

Collins, Daniel George, 118, Newgate Street, London, E.C., late Chairman Port of London Sanitary Committee. Corporation of London.

Fitzsimons, J B., M.D., 14, St. Owen Street, Hereford, Medical Superintendent Hereford Isolation Hospital.

On the motion of Dr. J. Groves, seconded by Dr. Arthur Newsholme, it was resolved unanimously that the thanks of the Society be given to the President, Members, and Hon. Sec. of the Northern Branch, and to Dr. H. E. Armstrong for the hospitality extended to the Society upon the occasion of the Provincial Meeting in Newcastle-upon-Tyne in July last.

On the motion of Dr. J. Groves, seconded by Dr. Sykes, it was resolved unanimously that the thanks of the Society be given to the Master and Fellows of Caius College, Cambridge, to Professor Sims Woodhead, and to Dr. Bushell Anningson for their assistance in the formation of the Eastern Counties Branch.

Presidential Address.—Dr. J. F. J. Sykes then delivered his Presidential Address on "Public Health and Architecture."*

Dr. J. Groves moved a very hearty vote of thanks to the President for his address. He considered that it was just the paper wanted, and that Dr. Sykes would be doing a good thing if he had it published with the diagrams. He did not consider a Medical Officer of Health fully equipped unless he was familiar with architecture. He must know the history of the house. Seeing that the greater part of people's lives are spent there it is important that houses should be in a sanitary condition.

Dr. Shirley Murphy in seconding the vote of thanks said it was the very best paper he had ever heard. He thought it would be lamentable if such an excellent paper should be lost. It ought to be published. He was particularly pleased with what Dr. Sykes said about Medical Officers of Health and Architects. He thought the Medical Officer of Health could learn something from the Architect, and that the Architect might learn something from the Medical Officer of Health.

Mr. Chas. Fitzroy Doll said that although he had not had the pleasure of meeting the President before that evening, he wished to bear testimony to the excellence of the address. He was delighted to find that the Medical Officers of Health were taking an interest in the architect's professional work above ground. He considered that his profession was the most scandalously neglected profession in the world. At the same time he thought that if it were taken in hand by the great medical profession—by such a Society as theirs, they might succeed in improving matters.

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* The Presidential Address will be published in the December issue of *Public Health.*

The motion of thanks was put to the meeting by Dr. Groves, and carried unanimously.

Dr. Sykes briefly acknowledged the vote of thanks.

On the motion of DR. GROVES, seconded by DR. SHIRLEY MURPHY, it was resolved unanimously to publish the address *in extenso* in PUBLIC HEALTH.

The meeting then adjourned.

ANNUAL DINNER.

THE Annual Dinner of the Society took place at the Trocadero, at the close of the Annual Meeting. The Chair was taken by the President, Dr. J. F. J. Sykes, who was supported by a representative gathering of members and friends. Amongst those present were the following: Sir Thomas Stephenson, Dr. P. H. Pye-Smith (Vice Chancellor of London University), Dr. Whitelegge, C.B. (Chief Inspector of Factories, Home Office), Mr. Andrew Clark (Chairman of Council of the British Medical Association), Mr. Alderman Idris (Mayor of St. Pancras), Dr. Franklin Parsons (Assistant Medical Officer, Local Government Board), Dr. Tatham (Superintendent of Statistics, Registrar-General's Office), Dr. Beaton, Dr. Dawson Williams (Editor, British Medical Journal), Drs. J. Groves, H. E. Armstrong, A. Newsholme, H. Meredith-Richards, R. A. Dunn, W. Whitaker, J. Beale Collins, P. Caldwell Smith, L. F. Bryett, W. A. Bond, H. W. Roberts, F. J. Allan, Oliver Field, Nathan Hannah, G. B. Millson, T. E. Lyon, J. A. N. Brincker, F. E. Fremantle, H. W. G. Macleod, F. G. Crookshank, E. F. Willoughby, William Butler, J. T. C. Nash, Ebenezer Davis, Joseph Priestley, Herbert Jones, Shirley Murphy, Willcox, Louis Parkes, Wellesley Harris, Messrs. Courthope-Munro, T. Cutler, Wolf Defries, C. Fitzroy Doll, Sykes, P. Ellis Richards, Young, Tidman, etc.

The loyal toasts having been duly honoured, Dr. Whitelegge proposed "The Municipal Authorities." The toast was, he said, happily placed in the programme. It stood between two outbursts of harmony, which was symbolical of the harmonious feeling which always prevailed when Municipal Authorities met. (Laughter.) He felt that he need not dilate upon the vast importance of the work devolving on Municipal Authorities. This was a branch of government second to none in importance, and those who had had to do with it would at once realize the vastness of the interests confided to the Municipal Authorities. For work of this kind they wanted the services of the best men of all ranks and professions, and he was happy to think they obtained them. They especially wanted the services of men of business, who would bring to the administration of the great responsibilities resting upon them the ability which had enabled them to conduct private enterprises with success and thoroughness. (Hear, hear.) The Municipal Authorities of this country had a great and increasing burden cast upon them—he said an increasing burden because the tendency of decentralization increased as time went on; and to carry on this great work it was necessary to have upon these Authorities men of ability and eminence, who gave their energies to the public service without hope of reward other than the consciousness of work well done and the esteem of their fellow citizens. He thought that all those who had any share of responsibility, whether as public servants or as officials, must admit that they occasionally made mistakes; but the mistake that a Municipal Authority could least afford to make was a mistake in the selection of its Medical Officer of Health. (Hear, hear.) He was glad that since the distant days when he himself embarked in the public service, a large and increasing number of public authorities had shown their appreciation of this branch of public work by offering sufficient inducements to men of the right calibre to choose a career in that branch of the profession which was second to none in interest and public importance. Among those authorities which at least had made no mistake whatever in their choice of Medical Officer of Health, St. Pancras might surely stand first. (Cheers.) St. Pancras had had a brilliant succession of Medical Officers of Health, including Sir Thomas Stephenson, Mr. Shirley Murphy, and their President that evening, Dr. Sykes. (Renewed cheers.) Alderman Idris, whose name he had great pleasure in coupling with this toast, had been associated with public bodies and public work for many years, and had set a brilliant example of how that work should be done. He had been connected with the London County Council, and at the present moment occupied the honourable position of Mayor of St. Pancras. Alderman Idris also ministered to the public health in another and less official way, which brought him into touch with the Home Office. He (the speaker) had not had the pleasure of meeting Alderman Idris until that evening, but he knew him by his high reputation, and was pleased to have the privilege of coupling his name with the toast. (Applause.)

ALDERMAN T. IDRIS, in responding, said the importance of the work of the Municipalities of London could scarcely be realized without some comparisons. The population of London over which these Municipalities ruled was greater than that of many Continental states—greater than that of Holland, for instance. Its streets would reach from here to St. Petersburg and back again; its main drains, of which his hearers knew something, and many of which were large enough to drive two coaches and four through abreast, would reach from London to Liverpool and most of the way back again; its population was the greatest of any city in the world, and it was the capital of the greatest empire the world had ever seen. It contained more Scotsmen than three or four of the typical cities of Scotland, such as Inverness, Dumfries, Perth, and Stirling, put together; it contained more Welshmen than Swansea, more Irishmen than Cork, more Germans than Gothenburg, and more Jews than Jerusalem. (Laughter.) In such a city as this the importance of the work of Medical Officers of Health could not be over estimated. (Hear, hear.) Indeed, it was difficult to realize the importance of that work. He well remembered that when King Edward presided at the Conference on Hygiene and Demography in London some years ago, His Majesty observed, "You call these preventable diseases. Then why not prevent them?" It was the duty of Medical Officers of Health not only to prevent disease among those who had every possible opportunity of repelling them; their mission was the still higher one of giving equality of opportunity to the poor and rich alike of our great city. He was particularly proud of those members of the medical profession who had served the Local Authority of St. Pancras. First of all, there was Sir Thomas Stephenson, of whom they had every reason to be proud. (Applause.) Then came Mr. Shirley Murphy, (applause) who like his predecessor, Sir Thomas Stevenson, had gone to occupy a higher position, and who would some day, they hoped, realize a similar honour to that which had been conferred upon Sir Thomas Stephenson. (Cheers.) The present Medical Officer of Health for St. Pancras, Dr. Sykes, was a gentleman for whom every Member of the Council had the highest esteem and regard, and though they did not want to get rid of him, they hoped he had a still more brilliant future before him. (Cheers.) He thanked them for the way in which they had received the toast, and trusted that in the future the Municipalities throughout the country might be enabled to work even more closely with the Medical Officers of Health in the highest interests of the people. (Cheers.)

Dr. PYE-SMITH then gave the toast of "The Incorporated Society of Medical Officers of Health." He said that the connection of the medical profession with preventive medicine was of the most honourable and satisfactory kind. They worked on a smaller scale, more or less in the seclusion of the home and the hospital ward. Their work was individual; they did not deal with disease in common. Their methods were necessarily deflected sometimes from scientific accuracy by the need of succouring immediate want, whereas preventive medicine was the most scientific branch of their profession. Not only was prevention better than cure, but it led to cure. For many of the investigations into zymotic diseases had thrown a bright light on methods of preventing disease and of curing and relieving them. One therefore felt proud of this branch of the profession in consequence of its completeness and more scientific method, but still more because of the high individual characters of those who practised it. He was struck by the public spirit, the unselfish devotion, the courage in opposing vested interests and indifference which the Medical Officers of Health had displayed. It was due to their persistent efforts through generations that this country had taken the lead in all the great improvements and reformations which had turned a fever-stricken, foul, and unhealthy country into one of the most wholesome in the world. (Applause.) They had, moreover, given hints to other nations, and that horrible stink place, as he knew it, Berlin, had, as the result of having sat at the feet of English preventive medicine, been transformed into, not a perfectly sweet, but still a perfectly healthy and livable city. (Hear, hear). Notwithstanding their past triumphs, they should not rest satisfied with what had been done. It had been affirmed that the man who said "Enough" was lost; that was true in every department of life. He felt that there was no fear of that motto being fixed on the portals of preventive medicine in this country. The excellence of all endeavours of this kind depended on individual character, and when he looked round that table he saw plenty of that kind of character that was necessary to carry out further necessary reform. The speaker paid a high tribute to the noble work of the late Sir John Simon, K.C.B., the founder of the Society, and also commented in eulogistic terms on the labours of Sir George Buchanan, whom he described as a man of remarkable intellectual power, and Sir Richard Thorne, who had represented them so admirably on the Cholera and Quarantine Conferences, and whose untimely death was a severe loss. It was a great pleasure to him to meet round this hospitable table old friends and some old pupils. Sir Thomas Stephenson was his fellow-pupil at Guy's hospital; they entered together, they worked together, they obtained all the various appointments that were within reach together, and they went up for the University examinations together, the only difference here being that Sir Thomas came out at the top. Since then, Sir Thomas Stephenson had devoted his great talents and his untiring industry and sympathy to the great work of preventive medicine. (Applause.) He (Dr. Pye-Smith) was delighted also to meet his old friend Mr. Shirley Murphy, who also had done excellent work and was not only deservedly looked up to as an authority, but was beloved for his personal character. (Cheers.) The Chairman, too, was an old comrade, and one who owed his present important position entirely to his merits. He hoped they would see springing up around them a large number of younger men who would be proud to claim that their labours were at any rate equal in intention, self-devotion, and energy, to the illustrious work of the great fathers of preventive medicine whom he had named.

The President, in responding, said that Dr. Pye-Smith had reviewed the attitude of this branch of medicine to curative medicine. He hoped they would forgive him if he confined his remarks solely to this branch, and gave them a few facts which he did not think had been published about the history of the Society. It was established in 1856, Sir John Simon being its first President. Sir John was followed by Mr. R. D. Thompson, who in his turn was succeeded by Mr. Drewitt. During that period—from 1856 to 1869—the Society was known as the Medical Association of Medical Officers of Health. Then the name of the Society was changed, and it became the Association of Medical Officers of Health, Dr. Lithiby succeeding to the Chair. Subsequently the name was again changed, and the Association was known as the Society of Medical Officers of Health. Sir George Buchanan was then its President, and he was followed by Sir Thomas Stephenson. After Sir Thomas they had Mr. Bristow, and after him Dr. Tripe. Then followed Dr. Orme Dudfield, and, in 1885, Dr. Corfield, and subsequently Dr. Hill, of Birmingham. Then the Society became amalgamated with other Societies which had been formed in other parts of England and Scotland. In the next year the Journal of the Society was started. Dr. Corfield was again elected to the Chair of the Society. Then followed their esteemed friend, Dr. Armstrong, who was succeeded by Mr. Shirley Murphy. At the end of Mr. Shirley Murphy's period of office, the Society became incorporated. Since then they had established branches in South Australia, and elsewhere, beyond the pale of England. After Mr. Shirley Murphy, came a series of Presidents; among others he would mention Dr. Newsholme, Dr. Wynter Blyth, Dr. Spottiswoode Cameron, and Dr. J. Groves. It was no easy task to follow in the footsteps of such men as these, and therefore he appealed for indulgence during his year of office as their President. He could at any rate assure them that nothing would be wanting on his part to maintain the reputation of the Society. (Applause) He congratulated the Members on the fact that they now numbered 937, and the main body of these were acting Medical Officers of Health. The membership was 387 in 1891; at the time of the amalgamation it was 270; in 1873-4 the membership was 115, and in 1870 only 80 all told; so that it would be seen that their progress had been considerable, namely, from 80 all told in 1870 to 937 to-day. (Cheers.) He hoped sincerely that before his year of office was concluded they would be able to report a membership of 1,000. (Hear, hear.) He held it to be essential that in the course of their duties they should make themselves acquainted with some branches of architectural construction, for in these days the tendency was to pack the population of towns in a manner that was injurious to public health, and led to that physical deterioration of which so much was heard. In all classes of society there was this tendency to overcrowd, and the medical profession should join hands with architects, and agree among themselves as to the limits of aggregation of population. There was of course a limit beyond which they could not go without danger to the community. Referring incidentally to the Library, the President mentioned that the Society had purchased the Library of the late Dr. Barry, formerly Inspector of the Local Government Board, and had acquired thereby 1,200 volumes of standard works on public health, which would, he was sure, form the nucleus of a very valuable library in the future. (Hear, hear). It had been the custom in past years for the President, when he returned thanks on behalf of the Society, to ask the Presidents of the Branches, who were, of course, pillars of the Society, to reply also. As they had with them two Presidents of Branches—Dr. W. H. Roberts and Dr. Ebenezer Davis—he had much pleasure in calling upon them to respond. (Applause.)

Dr. W. H. Roberts said he felt it a very great honour to be called upon to respond for the Metropolitan Branch, inasmuch as it was to that Branch that the Society owed its existence. He assured them that the older members of the Metropolitan Branch were delighted at the success which had attended the Society, and they hoped it would continue to grow and flourish. (Applause.)

Dr. E. Davis, who claimed to be the oldest existing Medical Officer of Health in the country, returned thanks on behalf of the South Wales and West of England Branch, and congratulated the present generation of Medical Officers of Health on the splendid equipment they possessed for their work, on their great achievements, and on the hopeful future before them. The vital interests of the British Empire were in their keeping, and it behoved them to remember their great responsibilities and embrace their opportunities. (Cheers.)

Dr. Groves then gave the toast of "Other Kindred Societies." They had the privilege that evening of having several representatives of kindred societies with them, and he had the honour of coupling with the toast the name of Mr. Andrew Clark who was not only eminent in the branch of the profession which he graced, but was the Chairman of the Council of the British Medical Association—the most powerful medical association in the world, and an association to which nearly all of them belonged. They were very grateful as a Society to the Association represented by Mr. Andrew Clark, but they had a grievance, and it was a very great grievance, and one which resulted in the interests of public health being prejudiced. He referred to the limited period of their appointments. He could not understand what he might almost call the stupidity of those who had the control of these things in permitting this handicap to rest on the sanitary service. The thing that prejudiced more than anything else the interests of public health was the short term appointment. He knew of no society whose members were so disinterested as those of this Society. He had never heard at the Council Meeting any questions of private interest raised; all he heard were expressions of a desire for the benefit of the community at large. The Council of the British Medical Association had done their level best in Parliament to remedy the grievance to which he had referred, but the Local Government Board, for some reason which he could not understand, said, "No, we will not give you fixity of tenure, without certain conditions." It was obvious that medical officers would be more likely to exert themselves in the interests of public health if they had security of office. The most energetic men, and the men who put pressure on their authorities, were the men most in danger; and why these officers should be handicapped in this way passed all conception. (Hear, hear.)

Mr. Andrew Clark, in replying, said he felt somewhat out of place in acknowledging a toast involving such a large number of Societies. The British Medical Association was a very comprehensive body, and he believed it contained a great number of the members of this Society.

He might here venture to remark that since the reconstitution of the Association, it was to the Medical Officers of Health that they were greatly indebted for the work that was done in the divisions of the Association, and they were also indebted to them for the part they took in the work of the Association generally. The Council of the British Medical Association always had before it the desire to further the interests of the Members, to whatever department they belonged. Medical Officers of Health were all of them doctors first and Medical Officers of Health afterwards, and there really was no separation between the two. In the Association there was a Committee called the Public Health Committee, which was composed not only of Medical Officers of Health, but of certain other Members of the Association interested in that subject, and that Committee endeavoured, as far as they were able, to further, not only the interests of Medical Officers of Health, but the interests of the whole of the Medical profession. One of the difficulties, as Dr. Groves had just pointed out, which Medical Officers of Health experienced, and which was, no doubt, more to the detriment of the community at large than the profession, was insecurity of tenure, for Medical Officers of Health who did their duty were, as the law at present stood, liable at any moment to removal by sanitary authorities. The British Medical Association, through its Public Health Committee, were endeavouring to forward a Bill in Parliament to get rid of that difficulty, and he hoped that during next Session that bill would become law, and Medical Officers and Sanitary Inspectors would no longer be under the disability of being liable to removal from office in consequence of doing what they considered to be their public duty. (Applause.) Other public health questions came before the Public Health Committee and the Council of the Association from time to time, and they were dealt with in the interests, not only of the medical profession, but more particularly of the public. Certain sections of the public always thought that doctors worked in their own interests, but he did not believe there was any profession whose members worked less in their own interests. He again thanked them, on behalf of the kindred societies, for the felicitous way in which they had received the toast.

The President, in proposing "Our Guests," mentioned the receipt of letters regretting inability to be present from Dr. Farquharson, M.P., Sir Victor Horsley, Sir Samuel Provis, Sir J. Crichton-Browne, Sir Cooper Perry, Mr. Gomme and others. They had, nevertheless, a representative gathering of guests, and they had to thank them for the support they had extended to Medical Officers in their work. (Hear, hear). The number of influential visitors with them that evening showed that they had won the good will and esteem of all those who were connected with them in their work. (Cheers.)

Mr. T. W. Cutler, F.R.I.B.A. was the first to respond. The guests were, he said, very pleased to be present, and were indebted to the Society for a very pleasant evening.

Dr. Seaton, in responding, said that as a medical man he had the utmost regard for Medical Officers of Health, and as Chairman of the Health Committee of the Borough of St. Pancras he knew the importance of their work, and was delighted to see that so many of the members of the Society were young men. He was sure they would put their manifold advantages to good account, and by doing for London more in the future than had been done in the past make it the healthiest, the best, and the most beautiful city in the world. (Cheers).

Dr. Franklin Parsons also replied. He assured the Society that it had the good will of the Medical Department of the Local Government Board, who highly appreciated the work done by Medical Officers of Health. "If we cannot go so far as you would wish," he said, "in enforcing security of tenure, it is due partly to the legal limitation of our powers, and partly to the fear of stereotyping unsatisfactory arrangements. I can assure you it is not through any want of good will towards you or appreciation of your services." (Cheers.)

Mr. Shirley Murphy, in the absence of Dr. Newsholme, who had been compelled to leave earlier in the evening, proposed "The Officers." As an old officer of the Society himself he expressed sympathy with those who were now holding office. He had had very many years' experience in the capacity of Secretary, and his sympathies were on that account particularly extended to the Secretaries. They all knew what an active and important part the Officers played, and it could not be denied that the success of the Society in the main depended on their efforts, judgment, and industry. (Hear, hear.) As a Society they were particularly fortunate in their Officers. They could not have a better or more capable Editor for their Journal than Dr. Allan. (Applause.) Dr. Allan intended developing the Journal on lines which promised not only to add to the influence of the Society, but to its usefulness to the public. Then they had, as one of their officers, Dr. Millson, who kept a vigilant watch over their finances, and whose excellent management of that branch of the affairs of the Society had ensured its success. (Hear, hear.) Dr. Priestley, as the Metropolitan Secretary, and Dr. Jones, as the Provincial Secretary, carried on the arduous work of correspondence; and, taken all together, they had a body of officers of whom any Society might feel proud.

Dr. Priestley, in acknowledging the toast, said he was sure that anything the officers could do to enhance the prosperity of the Society, and to make the Chairman's year of office a success, would be most willingly done. (Hear, hear.) The position of the Secretaries was no sinecure. They had a variety of individuals to deal with, and if there was one body of men more fastidious than another, that body was Medical Officers. He was glad that the Society had now provided the Secretaries with an executive secretary to assist them in their work. He had been a party to launching the Society on what some deemed an expensive scheme, namely, the acquirement of a house in Russell Square as a permanent house for the Society. He hoped time would show that the pessimistic views held by some were quite unjustified. (Cheers.) He trusted that the Society, having passed the resolution to take new premises, would forge ahead from that night—that they would, in the words of the Prince of Wales, as applied to the Colonies, "wake up." He hoped their removal to new buildings would be a stimulus to further exertions; and he was convinced that if they all worked together and supported their officers they would witness in 1906, in celebration of the Jubilee of the Society, a Congress of Public Health and Exhibition second to none in the world. (Cheers.)

Dr. Allan thanked Mr. Shirley Murphy for his kind remarks with regard to the Journal. Mr. Murphy had expressed the views, he (Dr. Allan) held with regard to their organ, but he was in the unfortunate position of not being able, through lack of time, to act up to that ideal to his own satisfaction. The work of editing the Journal, though arduous, had its compensation in the amount of information obtained through reading the papers and correspondence which arrived at the office from all parts of the world. (Cheers.)

Dr. Herbert Jones added a few words of thanks. Their Chairman had declared that he felt the responsibility of his position owing to the eminent Presidents who had preceded him. He (Dr. Jones) could assure them that the Secretaries felt their position equally difficult owing to the capable secretaries who had gone before. In looking through the records they knew how much their present Chairman had done for the Society while he was Secretary. The membership of the Society was now nearly 1,000, and included among the fellows were every single County Medical Officer of Health and, with one or two exceptions, every Medical Officer of Health of the large towns of this country. (Cheers.) Within the last few years they had added to their roll of members the Medical Officers of Health of the smaller districts in England, Scotland and Wales. When he became Secretary three years ago, he found that there was a feeling amongst Medical Officers of Health in the provinces that they need not join the Society because it looked after the interests chiefly of whole-timers. He said emphatically that that was not the case, and that the Society protected the interests of every class of Medical Officer. (Hear, hear.) If they desired to make the Society the success it was intended to be, they must make it clear that they looked after the interests, not only of whole-timers, but of every Medical Officer of Health throughout the country. (Hear, hear.)

Dr. Millson, in responding, said it was a mistake to think that this was a close Society. They appealed to a much larger *clientèle* than Medical Officers. They would be glad to see Borough Councillors joining this Society. (Hear, hear.) They had a very valuable Journal and other advantages to offer them. They could not appeal to the general public, but if any Borough Councillor wished to give them a bequest, he was sure they would receive it and take care that it was well applied. He was glad to report that they had a fairly good balance in hand; indeed, they must be in a prosperous condition because their balance was always on the right side. The Society gave to its members many privileges, and it was thought by not a few that the subscription of one guinea was inadequate, still they had no intention of raising it. They were launching on a scheme which he felt would be for the benefit of the Society, and he hoped that when they got into their new premises no greater burden would be placed on the exchequer, but that the building would be found self-supported. (Hear, hear.)

Dr. H. Meredith Richards, the recently appointed Librarian, also replied, declaring it to be his ambition to make the Library a complete and valuable one.

A capital programme of vocal and instrumental music was provided during the evening by Miss B. Gaston Murray (late Savoy Theatre), Miss Ethelle Stapley (Violin Soloist), Mr. Ambrose Thorne (of the London Pavilion), Mr. Fred Stephens, and Mr. J. A. Bovett. Mr. Alfred Smythson was the accompanist.

Conference *re* Vagrants and Small-pox.—At the suggestion of the Corporation of Newcastle-on-Tyne, a conference of the Sanitary Authorities of England and Wales is to take place at the County Hall, Spring Gardens, London, on Thursday, November 10th, to consider the agency of vagrants in the spread of infectious disease, and the preventive or remedial measures which might be adopted.

CURRENT PUBLIC HEALTH LITERATURE.

British Medical Journal.

(May 14.) The Occurrence of Primary Tuberculous Infection of Intestinal Tract in Children; Result of 5,142 Consecutive Necropsies. Wm. Hunter, Hong Kong. (Out of 5,142 consecutive necropsies, only 13 cases of intestinal tuberculosis were found, and 8 of these were considered as a secondary infection, being derived from tubercle foci in other parts of the body, leaving only 5 to be regarded as instances of primary intestinal tuberculosis. His conclusions are that primary tuberculosis of the intestine is rare under 5 years of age, and that tuberculosis of the mesenteric glands is also rare. These results, derived from a native population where tuberculosis is rife in all its forms, and conditions exceptionally favourable for its dissemination, point to the alimentary canal as a rare avenue through which infection is conveyed in childhood.)

Intubation in Laryngeal Diphtheria. John Biernacki and J. C. Muir. (From their experience they recommend intubation as a treatment in laryngeal diptheria, as against tracheotomy, in the absence of clinical contra-indications. Among these they mention severe involvement of the fauces and nasal passages, though even in severe cases intubation is not often contra-indicated. With palpable œdema of the upper part of the larynx, ulceration is a danger in some cases. The presence of membrane low down in the trachea as a contra-indication is in doubt. They do not believe in retention of the tube under ordinary conditions past the fourth day. It should then be taken out and kept out, if possible.)

(May 28.) Tuberculosis in the South of Ireland. J. Darlcy Wynne. (The excess of tuberculosis in the South of Ireland as compared with other parts of Great Britain is ascribed to the insanitary conditions that exist, the unventilated dwellings, dirty habits, etc.)

Primary Intestinal Tuberculosis in Children: Perforation of Ulcers. Nathan Raw.

Physical Examination of 1,580 Girls from Elementary Schools in London. F. May D. Berry.

(June 11.) Organization of the Home Treatment of Pulmonary Tuberculosis. R. W. Philip.

Bacteriological Enquiry into the Sterilization of the Hands. J. N. Collins.

(June 18.) Observations on an Epidemic of Scarlatina. Bertram Thornton.

(July 2.) Preliminary Note on the Cultivation of Anaerobes. D. J. Hamilton.

Value of Some Methods Used for Testing Disinfectants. E. Klein.

Experiments on the Disinfection of Bacillus Typhosus with Sanitas, Formalin, and Carbolic Acid. David Sommerville.

Diphtheria Contacts. (Editorial.)

The Control of Measles. (Editorial, dealing with the discussion on the subject by the Medical Officers of Health Society.)

(July 30.) Our Sanitary Needs (Address.) Sir W. S. Church.

Disease Germs (Popular Lecture). Dr. Ferguson.

The Economic Value of Re-Vaccination. Mrs. Garrett Anderson.

(August 6.) Camp Sanitation. E. C. Freeman.

Sanitation in Volunteer Camps and the Disposal of Excreta. P. B Giles.

Sterilization of Infective Discharges and Utensils in Field Service. A. M. Davies.

(August 13.) Discussion on Standards of Ventilation. By J. S. Haldane, Herbert Jones, T. Oliver, Matthew Hay, C. J. Thomas, W. H. Symons, W. L. Hunter, and J. Groves.

Discussion on Compressed Air Illness, or Caisson Disease. By Thomas Oliver, Lorrain Smith, and E. H. Snell.

The Influence of Antenatal Conditions on Infantile Mortality. By G. F. McCleary.

Discussion on Malta Fever. By Colonel D. Bruce, Fleet-Surgeon, P. W. Bassett-Smith, Surgeon-Major G. A. Hutton, Professor S. Grech, Major T. H. F. Clarkson, and Deputy Inspector-General Preston.

Central Public Health Administration. (Editorial.)

The Control of Diphtheria. (Editorial dealing with Dr. Thomas's report to the London Education Committee.)

(August 20.) Discussion on Trypanosomiasis.

(September 10.) Discussion on Immunity.

Discussion on the Rôle of the Lymphocyte.

(September 17.) Discussion on the Prophylaxis of Malaria.

Infectious Jaundice. F. M. Sandwith.

Epidemic Catarrhal Jaundice. S. Anderson.

Jaundice in South Africa. H. B. Mathias.

Borated Food as a cause of Lesions of the Kidneys.

The Lancet.

(April 23.) Epidemiology of Enteric Fever or Cholera in Hamburg. M. Reincke.

(May 7.) Amaas or Kaffir Milk-pox. W. E. de Korte.

(May 21.) Results of Treatment in 301 Cases of Phthisis by Open Air Methods. David Lawson.

(May 28.) Notes on Chloroformed Calf Vaccine. Alan B. Green.

(June 11.) Koplik's Spots in the Diagnosis of Measles. J. C. Muir.

(June 18, 25, July 2 and 9.) Deaths in Childbed: A Preventible Mortality. Milroy Lectures. W. Williams.

(July 2.) Non-flagellate Typhoid Bacilli. J. W. W. Stephens.

(July 9.) The International Health Office: Progress and modification of the project.

(July 30.) Our Sanitary Needs with special reference to the National Health. An Address in Medicine B.M.A. Sir Wm. S. Church.

The Red Light Treatment of Small-pox. T. F. Ricketts and J. B. Byles. (Not only is the case for this method of treatment not proved, but they hold that no serious evidence in its favour has been adduced. They object to it also because it interferes with the abundant air space and good ventilation which is essential, and besides it makes wards gloomy and depresses patients.) Appendix with charts and plates, in *Lancet*, Sept. 17.

Report of the Admiralty Committee on the Humane Slaughtering of Animals.

(August 6.) The Sera-Therapeutic Treatment of Anthrax. Prof. Ivo Bandi, University of Bologna.

Home-made Humanized Milk. C. B. Hall.

(August 13.) The Value of the addition of Citrate of Soda to Cow's Milk in Infant Feeding. F. J. Poynton. (See article in *Lancet*, July 22, 1893, by Dr. A. E. Wright.) (The advantages in the use of citrate of soda are stated to be: (1) It renders the curd of cow's milk more easily digestible; (2) It is cheap; (3) It is convenient to handle, easy to control and progressive in principle; (4) It allows the milk to be given in a more concentrated form, and thus avoids to some extent the danger of underfeeding; (5) There is no danger of scurvy; (6) Given as a medicine it gains the confidence of the mother. The indications are: (1) As a routine for weaning a healthy infant on to cow's milk; and (2) for correcting milk dyspepsia. The drawback is a tendency to constipation, which is, however, easily controlled and is not the experience of Dr. Wright. The limitations are: (1) In rare cases of complete intolerance of cow's milk; (2) In severe cases of gastro-enteritis from impure milk; (3) In organic disease, such as congenital hypertrophic stenosis; (4) In very intractable cases which have been subjected to all sorts of different methods beforehand.

(August 27.) Formaldehyde in Milk. W. Scott Tebb. (Method of detection by use of Schiff's reagent: After a lapse of time, formalin in milk not only ceases to respond to chemical tests, but also loses its preservative powers.)

(September 10.) The Latency of the Bacillus of Typhoid Fever.

(September 17.) Cancer Facts and Fallacies: A plea for the more scientific study and treatment of Malignant Diseases. Herbert Snow.

Plate Cultivation of Anaerobic Bacteria. H. S. Fremlin.

Infantile Diarrhœa. (Editorial.)

School Sanitation in Blackburn. (Editorial.)

Nephritis due to Borax. (Reference to Prof. Harrington's Paper, *Amer. Jour. Med. Science*, Sept., 1904.)

The Feeding of School Children. (History and Organization of the Paris Cantines Scolaires.) By the *Lancet* Special Commission.

The Practitioner, London.

(March.) Diagnosis of Enteric Fever. Claude B. Ker.

Anti-typhoid Inoculation. A. E. Wright.

(April.) Typhus in Egypt. F. M. Sandwith.

Provision of Sanatoria for London Consumptives. Louis Parkes.

(May) Small-pox in London in 1904. Geo. Newman.

(June.) Purity of Food and Drink. Louis Parkes.

(July.) This number is devoted to Syphilis in its various aspects.

(August.) Physical Deterioration. Louis Parkes.

(September.) The Diagnosis of Pulmonary Tuberculosis in Infants and Young Children. S. V. Pearson.

Glasgow Medical Journal, Vol. LXII, No. 4, October.

The Causes of Infantile Mortality. Papers by A. K. Chalmers, Prof. Glaister, Prof. Jardine, and R. Barclay Ness.

The Journal of State Medicine, Vol. XII.

(No. 5, May.) Dental Hygiene and the National Physique. Norman G. Bennett.

On Education: A Physiological Plea for Kindergarten Methods of Training. A. Beresford Kingsford.

The Transmissibility of Infectious Diseases during the Incubation Period. H. S. Willson.

The Pollution of Tidal Waters by Sewage. R. Tanner Hewlett.

(No. 6, June.) Necessity for Community of Action between Port Sanitary Authorities. A. M. N. Pringle.

Medical Supervision of Tropical Railways. H. D. McCulloch.

Small-pox: How to Stamp it out. Wm. Berry.

Some Additional Points in Connection with Chloroformed Calf Vaccine. Alan B. Green.

Elementary School Hygiene. Mrs. H. Percy Boulnois.

(No. 7, July.) The Application of Pneumatic Power to Works of Municipal Hygiene. G. M. Lawford.

Baths Engineering. W. R. Court.

The Bacteria of the Water of Public Swimming-Baths. Ernest E. Glynn, and John C. Matthews.

A Note on the Action of Radium on Micro-organisms. Alan B. Green.

Seasonal Incidence of Infectious Diseases, and the Duration of Residence of Infectious Patients in Hospital, in Relation to the Provision of Infectious Hospital Accommodation. William R. Smith.

Shellfish and Sewage Contamination. R. Tanner Hewlett.

(No. 8, August.) Inaugural Address to the Folkestone Congress of the Royal Institute of Public Health. The Right Hon. the Earl of Radnor.

Preventive Work in the Tropics. W. J. Simpson.

Address to the Section for Child-Study and School Hygiene. Sir George W. Kekewich, K.C.B.

Report of the Committee appointed to consider the Standardization of Methods for the Bacterioscopic Examination of Water.

(No. 10, October.) The Aim and Scope of Bacteriological Analyses of Water and Shellfish, with Special Reference to Sewage Pollution. E. Klein.

Remarks on Tuberculosis. Ferdinand Hueppe.

Outbreak of Septic Sore Throat due to Infected Milk. R. W. C. Pierce.

Alcohol and Children. George Carpenter.

The Journal of the American Medical Association, Vol. XLII.

(No. 14, April 2.) Treatment of Typhoid Perforation. Louis Frank, Louisville. Seat of perforation. Symptoms and diagnosis. Importance of early operation.

No. 15.) Bacteriology of Drinking Water. V. C. Vaughan. (*See Abstract in* Public Health, xvi., p. 502.)

Why is the Ability of Mothers to Nurse Their Children Disappearing? (Prof. Bunge of Basle (Virchow's *Archives*, 1904, p. 185) investigated 1,629 cases. Of these only 519 were "capable" (*i.e.*, were able to nurse their children for nine months). 39·2 per cent of the "incapables" had mothers who had been able to perform the function normally; 78 per cent. had chronic alcoholics for fathers. Only 2·6 per cent. of the "capable" daughters of "capable" mothers had had drunkards for fathers.)

The Inheritance of the Disposition to Tuberculosis. (Burckhardt in *Zeitschr. f. Tuberculose*, v. 4, has recorded the family history of 250 tuberculous and 250 non-tuberculous individuals. He found, apparently, that there was family history of tuberculosis in 66 per cent of the former, and in 42 per cent of the latter. He points out that this might appear to be strong evidence of hereditary transmission, but that the facts in a large proportion of instances show that infection had been conveyed from relatives by close association. Still, he does not believe that heredity is of no importance.)

(No. 16.) The Surgical Relation of the Vermiform Appendix to Perforation in Typhoid Fever. Levi Jay Hammond, Philadelphia. (Importance of prophylaxis of typhoid perforation. Percentage of cases where the appendix is the locality of perforation. Liability of typhoid to start up a recurrence of appendiceal disease. Elimination of the appendix as a prophylactic measure for typhoid perforation.)

The Action of Mineral Acid on the Cellular Substance of Typhoid Fever. May Wheeler, Ann Arbor, Mich.

The Chemistry of Bacillus Coli Communis. Mary F. Leach, Ann Arbor, Mich. (Notice of prior work in this line. Methods of study and analysis. Hexon bases. Similarity between bacterial proteids and other proteids.)

(No. 17.) The Intracellular Toxin of Bacillus Pyocyaneus. Donald R. MacIntyre, Ann Arbor, Mich.

(No. 18.) A Clinical Study of the B. Dysenteriæ in Boston. R. W. Hastings, M.D.

Illegitimacy, an Economic Problem. Jas. E. Davis, M.D. Detroit.

(No. 19.) Laboratory Aids in Clinical Diagnosis. C. E. Ruth, and A. S. Rider, Keokuk, Iowa.

The Transmission of Bovine Tuberculosis to Man: Proposition of Professor Adami for testing the effect of the ingestion of bovine products in infants as a cause of tuberculosis. The test which Adami would recommend is based on the fact observed by Theobald Smith that the reaction of the bovine bacillus, as well as some of its other biologic characters, is somewhat different from that of the human germ, and that it takes some time for it to become so modified outside of its normal habitat as to assume that of the subject in which it is placed. According to Roux and Nocard, it requires months to convert human into avian types. It may well be that the bovine bacillus in the human system will require likewise an appreciable period for it to take on, so to speak, human characteristics. In acute cases in children the active development of the bacillus should occur, he thinks, before its ordinary features have become lost.

(No. 20.) Intestinal Perforation in Typhoid Fever. B. B. Davies, Omaha.

Our Sero-therapeutic Measures. H. T. Ricketts, Chicago.

(No. 21.) The Scope of State Sanatoria: The growing sentiment for the segregation and treatment of the tuberculous. The question as to segregation of the early or of the late cases.

The Etiology of Whooping Cough: Whooping Cough as an infectious disease The varying reports of investigations as to its cause. Need of more work to be done before we can speak confidently of a specific germ. Summary of Article by Czapleski and Hensel, *Zeit. f. Hyg.*, Dec. 29, 1903.

(No. 22.) The Prevention of Typhoid Fever. R. L. Cole, Baltimore.

(No. 23.) A Case of Fatal Formaldehyde Poisoning. A man swallowed two or three ounces of commercial formalin.

(No. 24.) Preventive Medicine: Its Achievements, Scope, and Possibilities. Oration on State Medicine. Hermann M. Biggs, New York City.

Definition of Preventive Medicine. Its importance. Achievements of modern times. The widening of its scope. Registration and notification of infectious diseases. Regulations of the New York Sanitary Code. Communicable diseases. Their classification. Reasons for including certain individual diseases in the registration group. Tuberculosis. Cerebro-spinal meningitis. Infectious diseases of the eye. Puerperal fever. Erysipelas and whooping cough. Malaria. Acute diseases of the respiratory tract. Typhoid fever. Use of public laboratories. The reduction of the tubercular death rate. Diseases which appear to be increasing in mortality.

(No. 25.) Report of Committee of Am. Med. Assoc. on the Prophylaxis of Venereal Diseases.

Journal of Infectious Diseases, Chicago.

(March 19.) Toxic Action of Scarlatinal and Pneumonic Sera on Paramecia. Alice Hamilton.

Pneumococcal Bronchiolitis (Capillary Bronchitis). C. P. Clark and F. H. Batman.

Improved Technic of Agglutination Test in Typhoid Fever—the Use of Formalinized Cultures. E. H. Ruediger.

Bacillus Mucosus Capsulatus. A Study of the Group, and an Attempt at Classification of the Varieties Described. Roger G. Perkins.

Agglutination in the Group of Fluorescent Bacteria. Mary C. Lincoln.

Studies in Pneumonia and Pneumococcus Infections. Edward C. Rosenow.

Epidemic Gonorrhœal Vulvo-vaginitis in Young Girls. Joseph L. Baer.

Critical Study of the Methods in Current Use for the Determination of Free and Albuminoid Ammonia in Sewage. Earle B. Phelps.

Simple Test for the Routine Detection of the Colon Bacillus in Drinking Water. William R. Stokes.

Isolation of Bacillus Coli Communis from the Alimentary Tract of Fish, and the Significance thereof. George A. Johnson.

Sodium Sulphite: A Dangerous Food Preservative. Charles Harrington. (He has experimented with the sulphites, sodium sulphite particularly, on cats, and finds that in all the animals except the control one, the kidneys were affected, though the other organs were apparently normal. This substance is largely used as a meat preservative, especially in the popular Hamburg steak, and the necessity of its innocuousness is obvious.)

Studies of Media for the Quantitative Estimation of Bacteria in Water and Sewage. Stephen De M. Gage and George O. Adams.

Medical Record, New York.

(March 26.) Value of Total and Differential Leucocyte Counts during the Course of Typhoid Fever. Hy. A. Higley. (The characteristic typhoid leucocytosis, such as reduction in the total number, with a relative increase of large mononuclears, and a relative decrease of polymorphonuclears, should be watched. So long as the typhoid infection remains pure, the characteristics of the total and differential leucocyte counts peculiar to this disease are maintained, but they are altered in case of complicating infections. Therefore, frequent and careful, total and differential leucocyte counts may be of great value in enabling the physician to keep in touch with the variations in any given case.)

(April 2.) Anti-streptococcic Serum in the Treatment of Small-pox. Alfred C. Smith.

Rural Water Supplies. H. B. Bashore.

(June 2.) Distinctive Character of the Temperature Curve of Measles and of Scarlet Fever; and the Treatment of Hyperpyrexia in these Diseases by Baths of Increasing Temperature. H. W. Berg.

Acute Tetanus Cured by Intraneural Injections of Antitoxin. J. Rogers, Jr.

Hygiene and Gynecology. C. A. Von Ramdohr.

(July 9.) Illuminating Gas Poisoning (90 cases). W. Gilman Thompson.

July 16.) Study of Intestinal Perforation and Peritonitis in Typhoid Fever, with a Report of three Successful Operations, and a Statistical Investigation of 295 Operative Cases. William D. Haggard.

August 13.) A New Pathogenic Throat Organism. B. H. Stone. (Acute inflammatory condition of throat in 81 cases, accompanied by severe but not fatal toxæmia lasting 24 to 48 hours—presence of a diplococcus.)

New York Medical Journal.

(Mar. 26.) Influence of Typhoid Fever on the Nervous System. C. C. Harsman.

(April 2.) Critical Review of Some of the Recent Literature of Tuberculosis. Jonathan Wright.

When Should the Tuberculous Patient be Sent from Home? C. P. Ambler. (He thinks the congregation of a number of patients in a sanatorium or carefully conducted boarding-house, is preferable to allowing them to go to houses where hygienic regulations are not sufficiently considered. The advantages of change of climate may be summed up in better nutrition. The patient should endeavour to remain in the region where the improvement has occurred, and months should elapse after all signs of the disease have subsided before he returns to his own home. (*See also Med. News*, April 2.)

NEW PUBLICATIONS RECEIVED.

Board of Agriculture and Fisheries—Annual Report of Proceedings under the Sale of Food and Drugs Acts, Merchandise Marks Acts, Fertilizer and Feeding Stuffs Acts, and the Board of Agriculture Act for the year 1903. Cd. 2187. Price 3d.

Syphilis and Gonorrhœa. By C. F. Marshall, M.D., B.Sc., F.R.C.S. Senior Assistant Surgeon to the Hospital for Diseases of the Skin, Blackfriars, London. Roy. 8vo, pp. 267. Price 8/- net. London: Rebman, Limited, 129, Shaftesbury Avenue.

Food Inspection and Analysis for the use of Public Analysts, Health Officers, and others. By Albert Leech, S.B., Analyst of the Massachussetts State Board of Health. Large 8vo, pp. 787 + xiv. 120 figures, 40 fullpage half-tones. Cloth, 31/6 net. London: Chapman & Hall, Limited.

Sewerage and Sewage Disposal Apparatus (Catalogue). Price 7/6. Adams.—Hydraulics, Ltd., 7, Old Queen Street, Westminster, S.W.

Humane Slaughtering. By H. Heiss, Abattoir Director, Straubing, Bavaria. Translated by C. Cash, B.A. 94 pp. Price 1/-. Coventry: Curtis & Beamish, Limited.

New Streets, Laying out and making up. By A. Taylor Allen, Engineer and Surveyor, Portslade-by-Sea. Pp. 175. Price 3/- net. London: The Sanitary Publishing Company, Ltd., 5, Fetter Lane, E.C.

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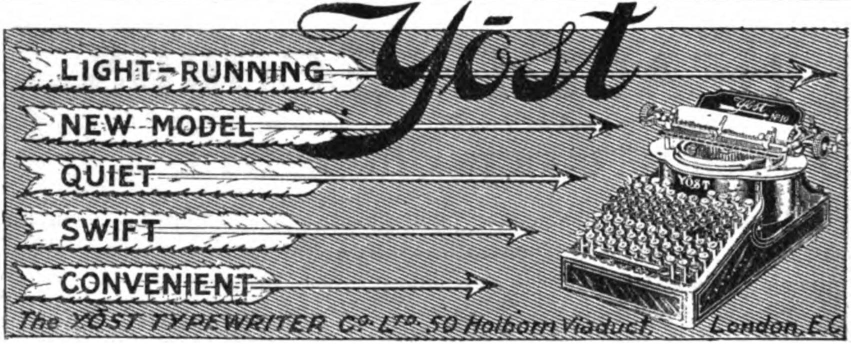
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SPECIAL NOTICES FOR THE MONTH.

MEETINGS OF THE SOCIETY.

AN ORDINARY MEETING will be held on Friday, 11th November, at 7.30 p.m., at the Offices of the Society, 9, Adelphi Terrace, London, when a paper will be read by Dr. G. A. Heron, entitled "Instruction in Hygiene in Universities and Schools—a Proposal."

Thursday, 17th November, 1904. West of England and S. Wales Branch, at Stroud, at 3 p.m. Papers by Dr. J. B. Fitzsimons upon "The influence of Hospital Isolation upon Scarlet Fever in Hereford," and by Dr. J. Middleton Martin upon "A few points in Public Health Administration."

Friday, 18th November, 1904. North Western Branch Meeting at the Victoria Hotel, Manchester.

The December Number of *Public Health* will be devoted to

"PUBLIC HEALTH AND ARCHITECTURE,"

BEING THE PRESIDENTIAL ADDRESS OF

Dr. J. F. J. SYKES,

Medical Officer of Health of the Borough of St. Pancras.

The Paper will be Illustrated with Plans, Drawings, etc.

"RETURN" CASES.—The Special Committee of the Society appointed to make enquiries with regard to "return" cases of Scarlet Fever or Diphtheria in relation to the question of Isolation Hospitals, will be glad to receive written suggestions. They should be addressed to the Hon. Secretaries, 9, Adelphi Terrace.

EPSOM COLLEGE.—Mrs. Skinner, widow of the late Medical Officer of Health for Willesden, is a candidate for a pension. Subscribers to this Fund are invited to give their votes in her favour.

ROYAL MASONIC INSTITUTION FOR BOYS.—Basil C. I. Russell, son of the late Charles H. Russell, M.O.H. Borough and Port of Gt. Yarmouth, and formerly Asst. M.O.H. and Port Medical Officer, Southampton, was successful in obtaining admission to the above Institution at the recent election.

THE ASSOCIATION OF PORT SANITARY AUTHORITIES.—The Annual Meeting of the Association will be held in the Westminster Palace Hotel, London, at 12 noon on Friday, 11th November. Dr. A. M. N. Pringle will propose the following resolution:—

"In consideration of the insanitary condition of the mercantile marine, this conference of representatives of Port Sanitary Authorities is of opinion that the control of the sanitary arrangements, both during and after construction, should be vested in Port Sanitary Authorities, and that medical Inspectorships for shipping should be created on the staffs of the Local Government Boards of England, Scotland and Ireland, to supervise all suggestions from such port authorities for the consideration and approval of the Board, and that this conference recommends the Council of the Association to bring the proposition under the notice of the proper authorities."

Continued on p. xii.

THE SANITARY INSPECTORS' EXAMINATION BOARD.—An Examination for Certificates of qualification for appointment of Sanitary Inspector, or Inspector of Nuisances, under Section 108 (2) (d) of the Public Health (London) Act, 1891, will be held in London on Tuesday the 17th January, 1905, and the four following days.

Particulars will be forwarded on application to the Honorary Secretary, The Sanitary Inspectors' Examination Board, 1, Adelaide Buildings, London Bridge, London.

WHEELER'S PURE, RICH, THICK CREAM (STERILIZED).—As the result of a number of experiments, Messrs. Wheeler & Co., 15, Great St. Helen's, London, E. C., have placed upon the market a special export cream, under the designation of the "Wheeler" Brand. They claim for it that it is sterilized, contains no preservatives, and retains the flavour and appearance of fresh cream. In order to test these statements, we have procured a number of tins for examination. One was submitted to chemical analysis, and the report thereon is as follows :—

The sample was contained in a sealed tin labelled "Wheeler's Pure, Rich, Thick Cream (Sterilized)." The sample was well put up, quite fresh and in perfectly good condition when opened. Chemical analysis gave the following results : Fat 28·13 per cent ; non-fatty solids 7·97 per cent (containing mineral matter 0·41 per cent) ; water 63·90 per cent. No boric or formalin preservative could be detected.

The composition of cream varies according to the mode of preparation, and the percentage amount of fat in it may be as low as 20 or as high as 50 or 60, as in Devonshire or clotted cream. The analysis of this particular sample, as well as its appearance, leads one to conclude that it is a natural cream, such as would be obtained by the skimming of set milk in the old-fashioned way. It is free from preservatives, and after keeping a number of tins for some months, we found the contents in good condition, and they kept well after being exposed to the air, even during the warm weather.

DRIED MILK.

In September, 1902, while the Staffs of the Carnegie Laboratory and the Laboratory of the Department of Health of New York City were engaged with the study of milk contamination to devise means for securing to the public, and more especially to infants and the young, a pure and sterile milk supply, two distinguished scientific investigators, Messrs. Just and Hatmaker, presented a new Dried Milk, which they claimed was pure, indefinitely conservable, and absolutely sterile.

It was in the form of a light, yellowish, flaky powder, which had the natural taste and odour of milk. It was easily brought back to liquid milk of excellent quality by adding water, and was obtained by drying milk rapidly at high temperature. Milk to be dried by this process is fed continuously between two steam-heated cylinders, revolving inversely and having a surface temperature in excess of 212° F. It passes between the cylinders (which are slightly separated), and is spread out in a thin, uniform layer or film upon each cylinder, and exposed thereon until reduced almost to dryness, being removed by a knife-edge while the film of milk solids yet retains sufficient moisture for their preservation. The milk solids come off the drying rolls in continuous moist sheets, which

Continued on p. xiii.

become dry instantly upon cooling, and are easily reduced to a uniform powder by being passed through a sieve.

The whole operation of evaporating the water of milk and obtaining its solids in dry conservable form occupied, upon the ingenious drying machine shown, less than thirty seconds. The milk was dried as soon as it came from the cow, and there was, therefore, no possibility of chemical change taking place in it before drying.

After the process had thus been shown, studies were begun to determine whether the milk solids had undergone any change in the process of drying. Analyses made at the Carnegie Laboratory, at the Experiment Station of the State of Massachusetts, at the University of West Virginia, and by the Department of Agriculture of the United States, showed that no determinable chemical change had taken place.

This dried milk was then subjected to thorough bacteriological examinations to ascertain whether it was absolutely sterile, and whether it remained sterile if protected from contamination by air bacteria (as by being enclosed in a proper box).

More than 400 bacteriological examinations of it were made by the Carnegie Laboratory and by the Department of Health of New York City, by the Department of Bacteriology of New York University, and by the Department of Pathology of Cornell University, New York, and it was proved beyond any doubt that this Dried Milk is absolutely sterile when it comes from the drying machine.

Living and virulent cultures of tubercular germs, and of anthrax germs, were introduced into milk which was then put over the drying machine, and the dry product resulting was found to contain no living germs. It was cultivated for bacterial growth without any development, and guinea-pigs were inoculated with it, repeatedly, without showing any pathologica reaction whatever.

Clinical Test.—Having passed successfully all bacteriological tests, this dry, sterile milk was subjected to physiological tests to determine its digestibility.

In connection with the officers of the Department of Health of New York City, and with the directors of several charitable societies interested in the rearing of infants, extensive infant-feeding tests were arranged. A number of physicians were appointed to supervise, with close attention, the feeding of about 850 children, ranging between five days and two years of age. They were average children, in good health, living for the most part in the poorer tenement house districts of New York City. They were fed exclusively with milk made from this dry sterile milk, during the four hottest months of the year, when infant mortality in New York was at its highest.

Where the mother was sufficiently intelligent, a box containing about one pound of the dried milk was left with her, with instructions to put so many teaspoonfuls of it into the feeding bottle, and dissolve it by adding a stated quantity of hot water. The hours of feeding were indicated, and it was imperatively ordered that *every portion of the reconstituted milk that was not taken by the infant at the time it was made, was to be thrown away.*

In a large number of cases, where the mother was either unintelligent or careless, or the sanitary conditions of the home were unfavourable, the portion of Dried Milk necessary for each feeding was left in a sealed envelope, not to be opened until the time of feeding. This prevented any handling of the powder, and ensured warm feeding of the milk. It was invariably required that all unused milk should be thrown away.

Continued on p. xiv.

The results of these feeding experiments upon 850 young children from the poorer districts of a great city are absolutely unparalleled in medical literature. *Not one child died.* The death-rate in New York at the time among similar children fed on ordinary milk was about 40 per 100.

With one exception all of the children gained regularly in weight—from 1¼ to 6 ounces per week. The exception was that of a child which during five days lost about three ounces, but which recovered and later re-established its good average.

One clinical observation of great practical importance was made, namely, *that the casein in the milk reconstituted from this dry milk forms in the human stomach in fine particles like mother's milk, and not in large clots like ordinary cow's milk.* This undoubtedly makes this milk more digestible, and there was evidence in the firm flesh and fine bodily development of the babies fed upon it that this essential nitrogenous element was well assimilated.

To meet the views of the physicians in charge of the different groups of children in the test referred to, the Just-Hatmaker milk was made from milk containing various proportions of cream. Some physicians followed the theory that a large percentage of fat is desirable in infant food. Such were supplied with dry milk which had been obtained by drying ordinary full-cream milk to which 50 per cent of cream had been added—dry milk containing 40 per cent of fat. Others acting on the theory that of the two carbohydrates in milk (fat and milk sugar) the milk sugar is the simpler and the more easily assimilated, went to the other extreme and used dry milk obtained by drying separated or skim milk, and which contained not over 1 per cent of fat. The general consensus of opinion was that dry milk, containing about 15 per cent of fat, was perhaps the best for infant feeding, although some physicians preferred dry milk containing 28 per cent of fat, and others dry milk containing 23 per cent of fat.

Our Own Examination.—In view of the extreme importance of the subject, we have considered it our duty to examine this Dried Milk (Galak) for ourselves. We have therefore submitted to analysis a sample of "Galak," from which a portion of the fat had been removed, similar to the form which appears to have found greatest acceptance in New York. We place side by side the "approximate analysis" given on the tin, with our own figures, from which it will be seen that there is practical agreement between the two:—

	Company's Analysis.		"Public Health" Analysis.	
Lactose etc.,	40·44	per cent.	41·58	per cent.
Proteids	29·44	,,	28·36	,,
Fat	16·24	,,	15·91	,,
Mineral Matter	7·62	,,	7·14	,,
Moisture	6·62	,,	7·01	,,

Two and a half ounces of Galak are required to form a pint of milk.

Citric Acid.—The profession now recognize that a certain difficulty, and even danger, may arise when boiled or sterilized milk is used for any length of time. Infants so fed have evinced a tendency to develop scurvy-rickets. This is apparently due to the loss of citrates, which are thrown out during boiling; we were therefore desirous of ascertaining if the method of preparing Galak had a similar effect. It is satisfactory, then, to be able to report that we found the citrates had not been eliminated during the process of drying, and we believe that Galak may be used without the least fear of scurvy-rickets or other untoward effects resulting.

Continued on p. xv.

The advantages of using a dried milk, such as "Galak," are numerous. The convenience of carriage and of dosage have been mentioned above; it is cheap, easily and quickly prepared, ensures a supply of pure milk at all times free from dangerous contamination; it can be obtained with its constituent parts in any proportion the medical man may desire. The use of Galak would seem to be of special advantage where Municipalities desire to distribute a safe milk, and it would be cheaper and much easier to distribute Galak than to have to erect a sterilizing or pasteurizing plant and all the elaborate equipment of a municipal milk depot.

We are informed that an interesting experiment is being started at Ilford. A member of the medical profession is installing a Crèche where all the cases will be fed exclusively on Dried Milk. Careful observations will be made and recorded, and full reports tabulated in due course. It is anticipated that the simplest methods of administering Dried Milk, even in the most ignorant households, will be thus arrived at. This experiment in the interest of humanity and science is being supported by voluntary subscriptions, and will have fixed days for visitors interested.

We are authorized to say that any of our readers who may wish to test the practical utility of "Galak," can obtain samples and information from the Institute of Hygiene, Limited, Devonshire Street, W., or from Galak Milk Products Company, 118, Fenchurch Street, London, E.C.,

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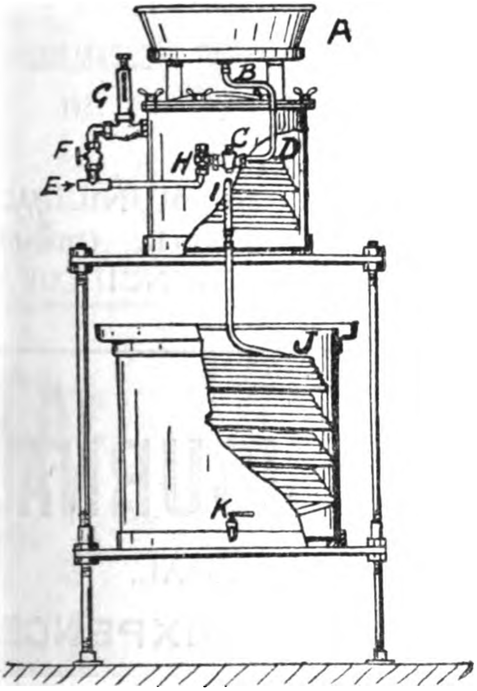

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CONTENTS.

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SPECIAL ARTICLE—

PUBLIC HEALTH AND ARCHITECTURE — PRESIDENTIAL ADDRESS (*John F. J. Sykes, M.D., D.Sc.*) *Illustrated with Portrait and 4 Plates* - - 129

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH, THE—

GENERAL MEETING - - 197
METROPOLITAN BRANCH - 200
YORKSHIRE BRANCH - - 200
NORTH-WESTERN BRANCH - 201
WEST OF ENGLAND AND SOUTH WALES BRANCH - - - 202
SOUTHERN BRANCH - - - 202

(*Continued on Page* vii.)

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CONTENTS—*continued.*

NOTICES—

Meetings of the Society - xi

North-Western Branch - xi

West of England and South Wales Branch - - - xi

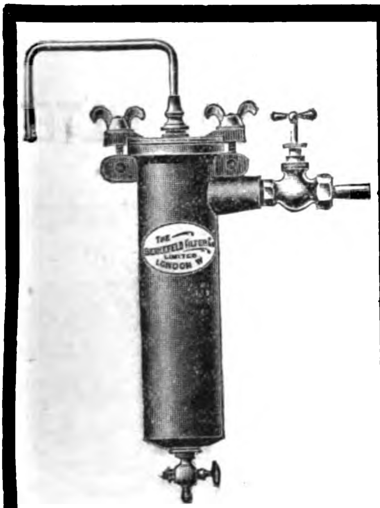
Epsom College - - - xii

NOTICES (*continued*)—

Dinner to Sir Shirley F. Murphy - - - - xii

The Sanitary Inspectors' Examination Board - - xii

Current Public Health Literature - - - xiii



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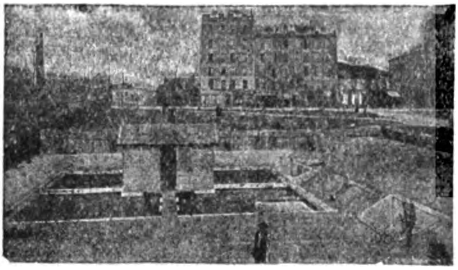

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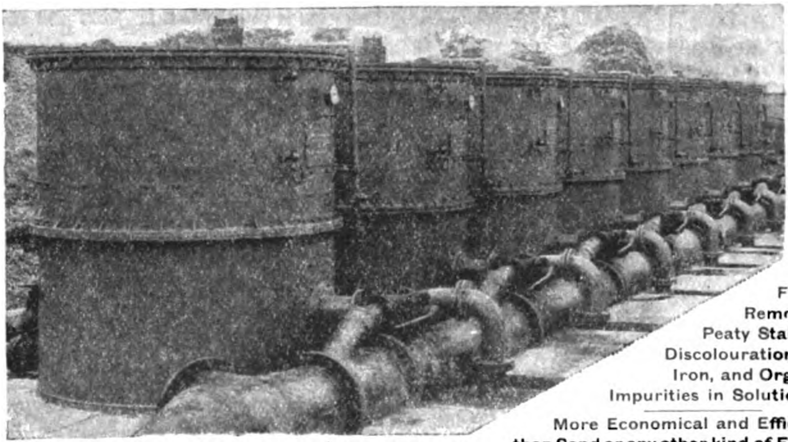

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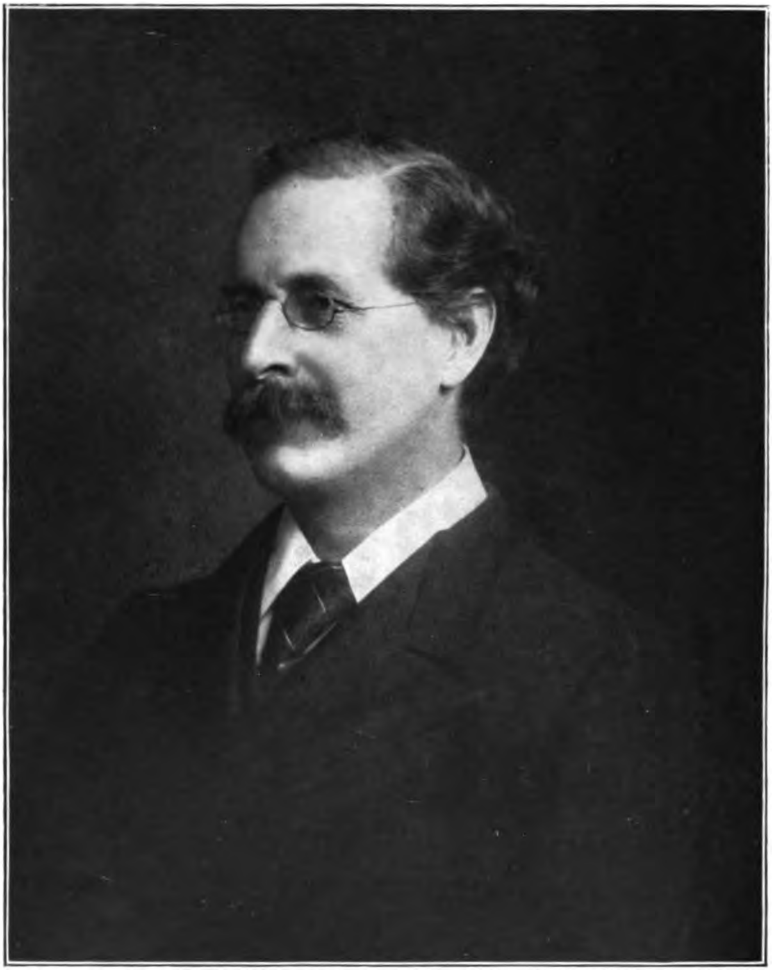


JOHN F. J. SYKES, M.D., D.Sc.,

PRESIDENT OF THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

PUBLIC HEALTH:

The Journal of the Incorporated Society of
Medical Officers of Health.

Vol. XVII. No. 3. December, 1904.

PUBLIC HEALTH AND ARCHITECTURE.

By JOHN F. J. SYKES, M.D., D.Sc.,
President of the Incorporated Society of Medical Officers of Health;
Medical Officer of Health, St. Pancras; Lecturer on Public Health, Guy's Hospital.

PRESIDENTIAL ADDRESS.

Introduction.

1. Overhanging Tree Shelter.

MY first duty is to thank you for the honour you have conferred upon me in electing me your President, and to assure you that to the utmost of my ability I shall maintain the best traditions of this Society which after several changes of title will soon attain the age of half a century, and of which the much lamented and recently deceased Sir John Simon was first President.

My next duty is to briefly state the subject and object of my address. The subject is the relationship of architecture to public health. The object is to draw your attention to those phases of architectural construction and arrangement in which Medical Officers of Health are interested, and to stimulate the study of this branch of our work in improving the national health. I venture to present to your notice a collection of drawings, engravings, plans, and diagrams that will render it easy and pleasant for you by pictorial illustration to follow my words.

Man will continue to misuse his body and his environment; and these misuses—like the poor—we shall always have with us to afford ample scope for curative medicine and curative sanitation. But, just as *curative medicine* proceeded through the notification of deaths to *preventive medicine* and this again has been more perfected by the notification of diseases, so *curative sanitation* is proceeding through the notification of nuisances to *preventive sanitation*, and is being more perfected by the notification of construction. And, it behoves Medical Officers of Health to look more closely into methods of preventive sanitation and especially those connected with architectural construction and arrangement.

The ideals of Hygiene are perfectness of personal habits, purity of ingesta, and healthiness of environment. The first is mainly a matter of private concern, the two last are subject largely to public control. This control is exercised by laboratory work and field work, and the field work radiates in three main directions, medical, constructive, and legal. This evening I wish to draw your attention in the constructive direction. Destructive criticism is comparatively easy; such criticism it becomes the duty of a Medical Officer to make when he condemns any thing or place as unhealthy. Constructive suggestion is much more difficult, and a Medical Officer of Health must be prepared to answer the question that invariably follows his condemnation. What remedy do you propose? And must expect to be regarded as impracticable if he cannot make a reasonable suggestion.

It is unnecessary for me to enumerate the many instances in which he may be called upon to express an opinion upon methods of constructive architecture from the point of view of health.

Architecture embraces both the science and the art of building; one or the other may be found to predominate according to the intended use of the building and the skill of the architect, but the true architect endeavours to maintain a just balance as expressed by his motto to "build in strength and beauty," one may also add "and health."

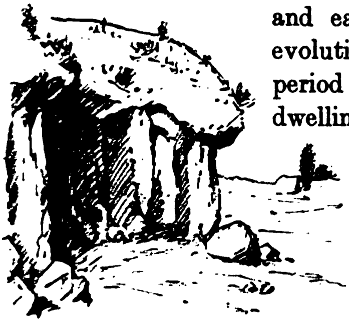
There are a few who conceive that architecture is "art" without the "texture," or the "tectonics," which embrace the art of constructing in accordance with utility as well as taste. Construction is the method, architecture is the result. I purposely use the word architecture in order to convey to you that I intend to deal more with fundamental errors of construction and arrangement than with devices intended to ameliorate or remedy them afterwards, and which they usually effect very indifferently.

Architects will generally be found to have such skill in designing and such adaptive capacity that they will have little difficulty in presenting a number of alternatives to meet and overcome any objections pointed out to them. Nothing appears impossible to a skilful architect. Medical Officers of Health must be prepared to understand and grasp the effects of any alternatives presented to them.

Both architect and medical officer have their weak and their strong points. The architect thinks in the cube and mostly of strength and beauty. He sometimes imagines that air will follow the direction indicated by arrow marks, and sometimes thinks it may spoil his building to consider how he will dispose of his surface and waste waters before completing his design. The medical officer thinks in the plane and sometimes fails to realise from plans on a flat surface the effects of proposed construction. He is rather a Goth in sacrificing artistic form or valuable space, and is not always flexible in his conceptions of alternative suggestions. The medical mind is more analytical, the architectural spirit more synthetical. The two types are complemental to each other and they must harmoniously work together to benefit the public health.

It is important for us to distinguish between structure and fittings and decoration, and not to fritter away our energies in endeavouring to secure decorative detail or particular fittings, which may be more or less temporary in durability and use, before we have secured healthy conditions of the permanent structure. Great stress must be laid upon this extremely important point which may be illustrated by such instances as covering the surface of a dwelling structurally unhealthy with whitewash and wall paper; inserting long tin tubes to ventilate a room instead of properly designing the permanent structure; using reflectors or reflecting surfaces to compensate for the inadequate provision for light in the planning of a building, etc.; insisting upon castors to dough troughs, whilst allowing stallboard openings to admit volumes of street dust into an underground bakehouse. Also, we must not be carried away from considerations of health by a beautiful elevation or interior; they excite our admiration but should not blind our perception.

In the time at my disposal it will only be possible to deal with the outlines of this wide subject, with here and there an illustrative detail to point a moral and adorn a tale. I do not propose to enter into the experiments, observations, and reasonings by which it has been established that sunlight, daylight, fresh blowing air, and pure flowing water, and the absence of effluvia, dampness, and other nuisances, are beneficial to health. You are well acquainted with them, and the facts may be taken for granted. My scheme is to sketch briefly the conditions of prehistoric dwellings, nomad dwellings, and early fixed dwellings, tracing shortly the evolution of the house, passing on to the historic period and the further development of the dwelling-house, and dealing with the present-day conditions in this country, and some of the difficulties met with in conforming construction to the requirements of health.



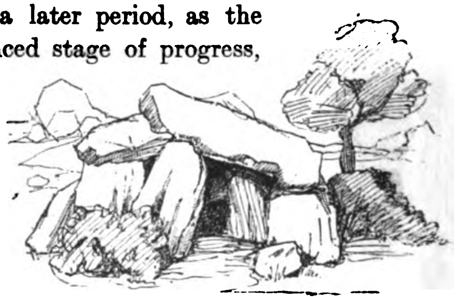
1. Overhanging Rock Shelter.

3. Tilted Trees Shelter.

When man first sought shelter he found it under the overhanging forest tree and mountain rock. His first rude efforts of imitation led him to produce artificial shelters by inclining trees together and tilting rocks towards each other. When he had learnt to move trees and rocks, he began to understand how to poise and fix them so as to maintain them upright, and to stretch across them parallel rows of branches and rushes, thus forming covered alleys in the sides of tree trunks, or of split rocks according to the soil of the country in which he found himself. As time went on he fashioned himself circular, square, and elongated huts of various materials to hand; and when he sought greater security from wild animals and human enemies he placed his fragile dwelling in trees on lakes and upon ledges of cliffs. These early forms of rudimentary shelters are shown in the series of sketches of prehistoric dwellings before you.

It must be obvious that the use of ready-formed materials, and especially of flexible materials, must have long preceded the use of worked materials, and especially those of the harder kind, and that worked stone came into use at a comparatively late period of man's history.

Omitting for the moment the raised constructions, these rudimentary shelters protected their occupants merely from the vicissitudes of climate and weather, but subjected them to the wetness and emanations of the soil, and within and without they must have become unspeakably foul and unhealthy. The unhealthiness of the early shelters was doubtless mitigated by their flimsiness, and their easy destruction by the elements, necessity compelling the occupants to clear the site from time to time and re-make the dwelling on the same or another site. The occupants were also strengthened against disease by the open-air life they must of necessity have led, although probably they did not wander far away from their original location, where they had learnt to find their primitive material wants satisfied. They were less nomadic than at a later period, as the nomadic state implies a more advanced stage of progress, namely, the construction of portable dwellings. The direction in which the earliest progress took place, and, in fact, in which the progress of construction appears always to have had its initiative, was in that of



4. Tilted Rocks Shelter.

defence, to which I shall again refer later on, and the primitive dwelling was raised for this purpose above the ground. The means of improving the defensiveness of the dwelling must also have been the means of improving its healthiness, and there is no doubt that it marked a considerable advance both in the physical and intellectual state of primitive man.

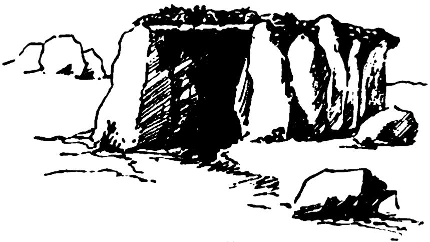
5. Covered Alley (Wooden).

The primitive type of shelter in some form or other is not extinct: we come across it occasionally in various places, usually as a temporary form of abode, in the present day.

In his earliest state man was probably less nomadic than after he had learnt to interlace grasses to make wicker-work, and later to weave fibres into continuous flexible materials. He could then carry his dwelling with him, and seek food and pasturage afar. In various parts of the world he made sheds and tents of various shapes and sizes, and all the many picturesque outlines of construction began to appear, commencing with the sheds of the Aryans constructed of wicker-work and rush matting.

The possibilities of outline in such flexible materials as tents are composed of is illustrated in later days by the domed tent of the Turkomans, the rectangular tent of the Hebrews, the rectangular and domed tent of Assyrians, the two-storey, rectangular, and gabled tent of the Aryans under which they sheltered their cattle and slept above, the pent-roofed waggon tent of the Aryans, and the horse-shoe chariot tent of the Huns, all as shown in the sketches before you. These movable or portable dwellings were adopted by tribes of men when migrating, either on account of being driven away by other tribes, or because of the inhospitability or infertility of the country, or the great increase in numbers of the tribes.

The destruction of life and health amongst these wanderers must have been great under the adverse conditions presented by the frailness of their dwellings and the changes of season, by the difficulties of obtaining food and materials for clothing. The favourable conditions were those of temperate climate, fair weather, open-air life, and continuous change of site, as the site of a primitive encampment must become foul and unhealthy. Gipsy encamp-


6. Covered Alley (Stone).

8. Tree Dwellings.

ments and caravans are not unknown to all of us at the present day, and, like their prototypes, demand our attention.

We now pass to a period when early fixed dwellings of a more permanent type began to appear, although still in the early stage of civilization. As illustrative of this period the sketches show the Etruscan cabin, the German hut, the circular and the square Gallic hut, and the primitive Egyptian dwellings. They show an advance in both materials and methods of construction. They are not all of the same period, because the development of civilization was not contemporaneous in all parts of the world, but they illustrate the early methods of early peoples in different countries. They differ in materials according to the substances to hand, they differ in form according to climate and the habits of the inhabitants, but they have this in common, that they foreshadow types of buildings developed later more fully as civilization advanced. They show the materials and the forms of certain parts of dwellings in their early evolution.

Attention may be particularly directed to the wooden dwelling of the forests of North-Eastern Europe, called a German hut, raised above the ground, and underneath which the domestic animals sheltered. To the Etruscan cabin of Southern Europe, erected on an eminence, and consisting of separate compartments, and constructed of clay and clay-bricks, wood, and rush-work. To the hut of Gaul, where rough stone was more available for piling up circular walls, with the primitive hearth in the centre and the central smoke hole, all more or less sunk beneath ground-level, obtaining greater equability of temperature, but rendering them "damp, low, and noisome." To the primitive Egyptian dwelling constructed of mud and reeds in the delta of the Nile, and those scraped out of the soft limestone rock higher up the Nile valley.

There is little doubt that the facility of dislodging, striking, and scraping away, surfaces composed of soft materials gradually gave man the mastery over the harder. Some chalk cliffs readily lend themselves to fragmentary dislodgement and the making of grottoes, some limestone cliffs are comparatively easily worked by striking the surface away to form caves,

7 Primitive Huts.

9. Cliff Dwellings.

and with the development of a little more ingenuity and somewhat fitter tools sandstone rocks may be scraped or excavated to form recesses and chambers.

These rock dwellings partly arose from the necessity of defence, the arts of war again showing themselves as a means of human progress, just as in their turn the alternate arts of peace gave the opportunity to women's occupation to make further advance in the weaving of textiles by which the different parts of cave dwellings were separated from each other, the men's, the women's, and the children's apartments, and by which also the inclemency of the weather was partly excluded. These rock dwellings suffered little from dampness and soil effluvia, but, on the other hand, the exclusion of light and air must have rendered the interior air foul, and the *debris* that accumulated on the interior surfaces added to this considerably, so that in the end they became more unhealthy than the early rough dwellings of wood, stones, and mud.

The use of mud and clay under a hot sun and dry atmosphere led to the moulding of these plastic materials into the easily-manipulated form of bricks, dried at first naturally in the sun, and later on artificially by fire. The moulding of bricks no doubt preceded the working of stone. Ultimately, when defensible dwellings could be constructed of more solid materials the cliffs were forsaken for the valley and the plain, and bricks were used to imitate the structure of rock dwellings.

The making of rock-dwellings survives to the present time. North of Kidderminster lies Kinver Edge, a ridge of red sandstone terminating abruptly at the River Stour. In this red sandstone dwellings have been excavated, of which the two drawings before you show, one a deserted cave-dwelling, the other a typical rock-dwelling occupied to-day. The soft red sandstone is so easily worked that rooms, passages, shelves, recesses are readily excavated as desired. The interior is dry, is kept cleansed by scraping, is capable of extension, and has an equable temperature. The absence of through ventilation must of necessity produce stagnation of the contained air prejudicial to the health of the occupants, but this is

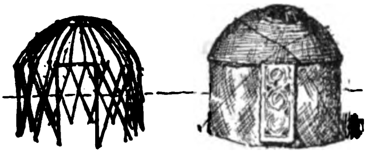
10. Lake Dwellings (Piles).

11. Primitive Bell Tent.

probably counteracted by the country life, the elevated position, and the open surroundings, and the purity of the external atmosphere. Rock-dwellings are also found elsewhere. For instance, in France in the valleys of the Loire, the Vienne, and the Loir, and in the latter at the village of les Roches nearly all the 550 inhabitants are "Troglodytes."

We now reach a period of human history when numerous materials are available for construction: Flexible substances, such as trees, branches, leaves, grasses, and woven fibres; plastic materials, such as mud, clay daub, and binding substances mixed with them; moulded materials in the form of cubes and other shapes, such as bricks, at first sun-dried, later baked by fire, and later glazed; and, finally, hard materials, such as wood, in the rough or hewn, and stone naturally broken, or later artificially split and worked.

Parts of structures also developed into various constructive forms. Thus the *roof* became the first element of the house, and at first it was all roof. Then followed the *sides* with the means of access, or the *door*; and when the door was shut to exclude enemies or wild animals, the admission of air by wind-holes, and later by *windows;* and in extreme cold weather the means of warming by the sunken hearth, or later by the *fire-place;* and the outlet for smoke, or smoke-hole, later becoming the chimney.

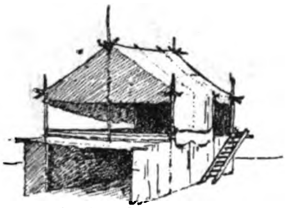


12. Domed Tent (Turcoman).

Mr. Sidney O. Addy has traced the "Evolution of the English house," (recently published by the firm of Swan, Sonnenschein & Co., of High Street, Bloomsbury), in a most interesting manner through the circular hut, and the double-pent cottage with roof and walls in the same incline, and the crucks seen in northern counties, derived from the inverted boat of the Norsemen, which again is the derivation of the nave, the addition of the upright walls to the crucks, and the further addition on each side of half crucks and walls forming aisles. These constituting the early features of the farm house, the horses being stalled in one aisle and the cows in the other, the men sleeping in the loft over the

13. Rectangular Tent (Hebrew).

horses and the women in that over the cows, upon the fodder and litter intended for the animals. The Frisian or Saxon farm-house bears out this arrangement of the *menage*, but the Frisian invaders, in the construction, replaced the crucks by uprights and cross-beams.

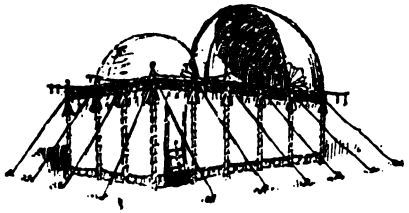

15. Gabled and Rectangular Tent (Aryan).

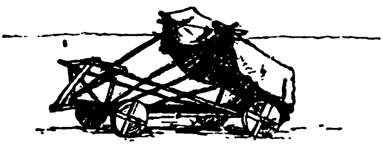
Violet le Duc says, in his *Habitations of Man:* "Look at the English cottage; we still have the Aryan's house, not only in construction, but in arrangement. There you invariably see the living-room where the family assemble, and next that separation of the domestic life from the public life; the *gynæceum* of the Greeks and the *nursery* of the English is pretty much the same place; for the gynæceum must not be confounded with the harem—the one is the sanctum of the family, the other a sort of aviary shut in from the gaze of strangers."

As before said, the arts of war and the arts of peace have alternately advanced architecture both on its artistic and salutary sides. It was in militant constructions that the foundations of scientific architecture were first laid, and in ecclesiastical buildings that artistic developments in structure were first fostered. In times of peace, while the woman was furnishing contrivances for internal decoration and æsthetic well-being, the man was improving the structure and the internal arrangements and fittings for physical well-being.

Amongst these fortified structures we must include the early solitary round and square towers (more extensive buildings as time progressed), the Eastern palaces of ancient days, and the feudal castles of the middle ages.

The main types of the different styles of architecture evolved through the centuries, varying with locality, climate, and available material, and influenced by religious, political, social, and artistic activities and foreign relationships. Contrast the slight wooden structures of the Far East, for instance, Japan, where earthquakes are not uncommon, with the ampler solid structures of Western Europe; or the houses of the tropics, possessing ample verandahs and flat roofs, with houses in the frigid North, whose roofs are pent and whose walls are thick; or the brick houses of the plains with the stone houses of mountainous districts; or ecclesiastical structures for divine uses with equally large-proportioned structures intended for secular purposes. Each nation has evolved its own highest type of building accord-


14. Domed and Rectangular Tent (Assyrian).



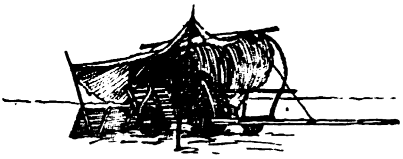
16. Pent-roof Waggon Tent (Aryan).

ing to time, place, and tradition. The Japanese Choji, the Chinese Pagoda, the Assyrian Palace, the Egyptian tomb, the Greek Temple, the Roman Bath, the Ecclesiastical Monastic, and Feudal buildings of Central Europe in the Mediæval period, the Cathedrals and Palaces of the Latin countries (Venice, Italy, Spain), the Dutch and Flemish Guild and Town-Halls, the German Castles, the French Chateaux, the English country houses, these each in their time and place have illustrated the perfection of their kind.

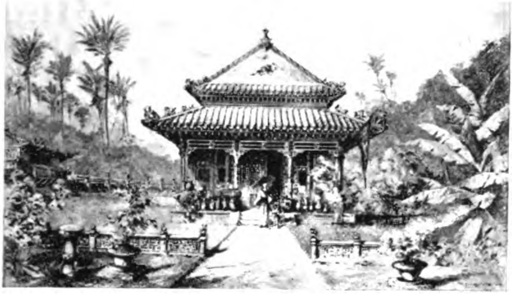
Elementary houses of the historic period: The two types of houses of the Pelasgians—one after Violet le Duc, the other after Garnier—show us the elements of architectural order developing themselves in the early historic period. The one is circular, the other rectangular. In the former observe the cone-shaped interlaced roofs of branches and reeds, the circular wall of rough stones, the gable entrance and wind-hole, and the apex of the cone of the roof poles (without interlaced leaves) acting as a smoke-hole. In the latter observe the single pent roof of unhewn tree poles laid side by side covered with turf or grasses, the rectangular walls of rough stones, the doorway apparently of hewn stone, trabeate in character and supporting a lintel, above which is the rudimentary arch of Ruskin formed of two stones placed gable-wise, leaving a triangular wind-hole between them and the lintel of the door. Neither have any protection against soil emanations or dampness in the dwelling, but the rough stone walls would exclude dampness and admit plenty of air.

Cottages are found in England little advanced on these early dwellings. Many no doubt condemned as insanitary on the grounds of not excluding dampness and effluvia, and admitting insufficient light and air. Very picturesque, but very unhealthy, their ill-effects only counteracted by the healthy open-air life led by the occupants.

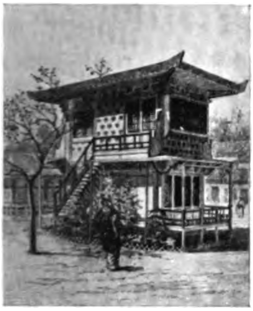
Timber houses were adopted by peoples north of a line roughly drawn diagonally across the Eurasian Continent from South-East to North-West through the Aryan centre. These embrace Japanese, Chinese, Himalayan, Russian, Sclavic, and Scandinavian houses. Their characteristic is the lightness of structure, perhaps due to liability to earthquakes in the East, and having more solid foundations towards the West. Another characteristic is the raising of the house above the ground upon wooden or stone supports, no



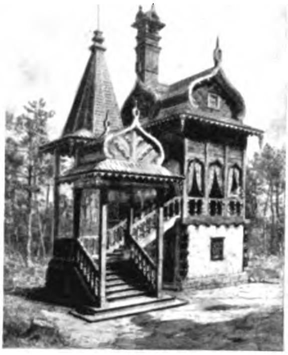
17. Horseshoe Chariot Tent (Huns).



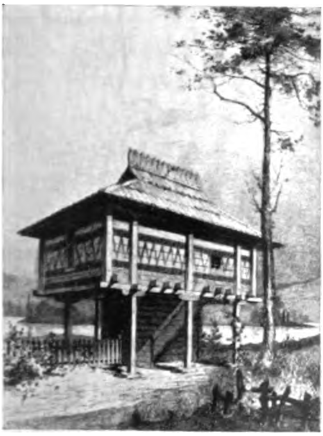
30. CHINESE



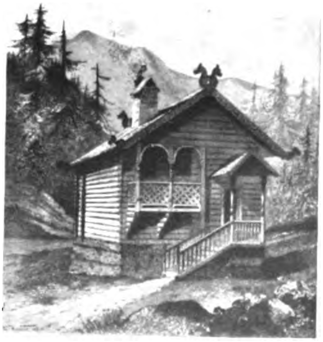
29. JAPANESE.



32. RUSSIAN



31. SCLAVIC.

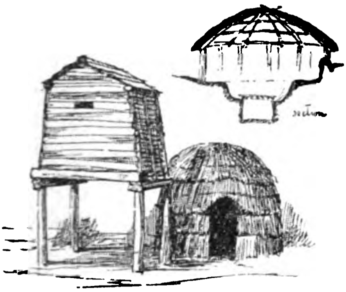


33. SCANDINAVIAN.

18. Etruscan Cabin.

doubt first as a means of defence, later to exclude the emanations of the soil and secure greater dryness. Wood was chosen in the northern latitudes because of the abundance of forests, and because it forms the dryest and warmest dwellings, and because when tools had been perfected it could be fashioned to almost any form and purpose.

It is said that timber houses are no longer built in this country because they do not come within the requirements of Building Acts and Bye-laws. There is, undoubtedly, great danger from fire, and in closely-packed towns and cities they would be a menace to public safety, but this cannot apply to sparsely-populated parts. One-storey or even two-storey wooden buildings with an easy drop in case of fire ought to be capable of safe, healthy, and economical construction in the country. I have a very pleasant recollection of spending a holiday once in such a house. We should take a leaf out of the Norwegian book.



19. Germanic Hut.

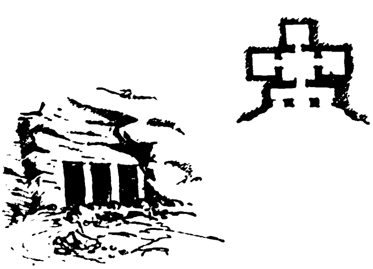
Saracenic architecture employed by the Mahommedans embraces the Arabic, Moorish, Persian, and Indian Saracenic styles. The features of construction are the pointed, often horse-shoe arch, and the pointed, often bulbous dome. The earliest constructions were of bamboo, rushes, and thatch, and clay and daub, later stucco, and later still stone, always combined with wood in Arabesque forms and Mosaic. The direct rays of the tropical sun and the scorching winds of the desert sands were excluded by the small size and number of the openings, the internal still air being cooler than the outer atmosphere, but requiring scrupulous cleanliness to preserve a semblance of purity. According to Dr. M. G. H. Paschayan, of Tauris, in the present day, ordinary Persian dwelling houses are low and narrow, and hidden away behind high mud walls. They are usually some steps below the level of the ground, and the mud roof, which is flat, forms a terrace where the people sleep in summer. The typical room is small, with a narrow window, or rather hole without glass, and a low door which

20. Gallic Hut.

often does not shut. Air and light penetrate with difficulty, consequently the houses are always damp. The floor is formed by earth, which is bare or covered only with coarse matting, and the walls are of plain mud, not whitewashed. The fire stove, or brazier, is in the middle of the room. By reason of the extreme filthiness of the dwelling and its furniture, the want of light and air, and the confined space, Persians suffer much from anæmia, phthisis, and other diseases depending on unhealthy conditions.

The houses of the Mediterranean civilizations passed through the several stages in the use of materials that appear to have been more or less common to all peoples—the flexible, the plastic, the moulded, and the hard solid.

The Assyrian house had walls of blocks of beaten clay, superposed and cementing themselves into a compact mass of sun-dried brick. Narrow, circular channels ran in various directions through the walls to dry and set them firm, except in the lower parts, where sun-dried bricks were used cemented by bitumen, a unique peculiarity of the Assyrians mentioned by Herodotus; and the Ninevites acquired the art of burning limestone into lime and mixing it with fine sand to form plaster and cement. The digging of the numerous canals in the plains furnished abundance of clay for building purposes. From the use of clay coating over arched canes the Assyrians learnt to build arches and cupolas and demi-cupolas; from clay coating they proceeded to the use of clay bricks, and so to sun-dried bricks, and finally to fired bricks. The evolution is easy to imagine when we know that in that part of the world from an early period the cane arch was a favoured form of roofing. The open demi-cupola was a most healthy form of construction, as it admitted light and air without glare.



21. Egyptian Rock Dwelling.

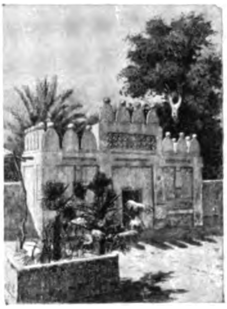
The Phœnician house was constructed of moulded clay and of brick; Roman historians also speak of very tall houses and the plentiful use of stone in Phœnician cities.

The primitive Egyptian house was constructed of reeds, canes, palm leaves, mud, clay, and straw. The mud and reed or clay and palm houses were constructed near the shores of rivers and lakes, but out of the reach of inundations, as if they were immersed in water they would fall together. So they were also erected on platforms, and reeds, etc., were mingled with the plastic material to hold it

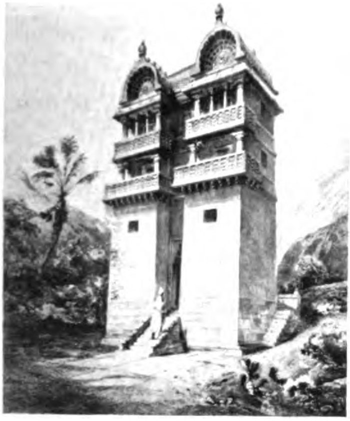
PLATE II.

MOSLEM HOUSES.

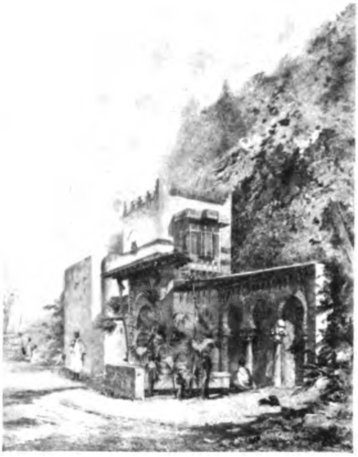
SARACENIC STYLE.



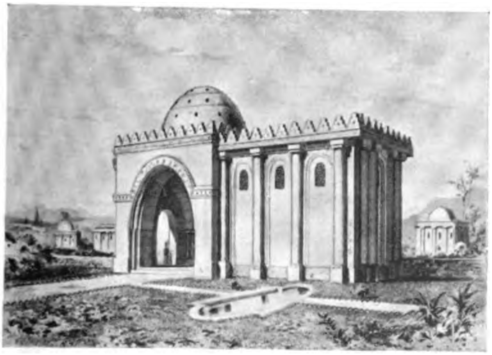
37. SOUDANESE



34. INDIAN.



36. ARABIAN.



35. PERSIAN.

longer together; in fact, later parallel walls of reeds were filled in with beaten clay. The dried clay had the advantages of possessing little capillarity, porosity, or perviousness, whereas burnt clay in the form of bricks possesses these qualities in a considerable degree. On the other hand, in the matter of weathering, clay is not durable and brick is. Hence later the Egyptians used brick when they had acquired the art of burning clay and making pottery; and, later still, stone when they had learnt to cut the stone in the making of rock-dwellings in the upper valleys; usually limestone, elsewhere sandstone, furnished examples of rock-dwellings.

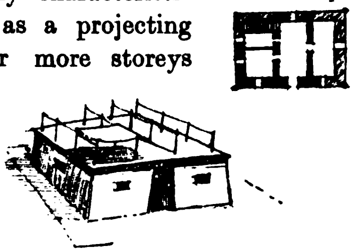
The Hebrew house was built of dressed stone, with steps up to a flat roof, used for repose on hot nights, with or without a tent erected upon it. The door was very solid, and air was admitted into the house by wind-holes.

The Grecian house: Here we arrive at the commencement of the period of higher artistic effort—the use of stone artistically dressed or chiselled of plaster, of tiles, and of many materials beautifully formed for the construction and adornment of buildings. The Greeks, in order to obtain equability of temperature and dryness, constructed the interior of their buildings of wood and the exterior of stone, just as the later Aryans had covered their frail houses of wood and wattle with daub. This enabled them to employ both classes of workmen, those in wood and those in stone, and produce the most excellent results. The use of floor tiles and mosaics also sealed the lower surface of their dwellings; and they placed their timber columns, supports, and other work on stone bases. They were also careful as to eaves and guttering to preserve the dryness of the external walls.

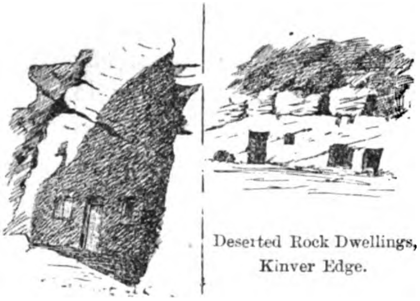
The Etruscan house shows the commencement of Roman architecture, the superstructure of wood being raised in stone in later periods.

The Romance house, the Roman Italian, the Roman Gallic, and the Later Roman, show each their variations of structure in accordance with the period and the degree of advancement, until we reach the Mediæval house, and later the house of the Renaissance.

The overhanging superstructure was often found in early houses of the historic period, and was particularly characteristic of Mediæval times. It was constructed as a projecting room, or balcony, or verandah, one or more storeys high, projecting one beyond the other. No doubt this mode of construction was in the first instance economical, as upon a smaller stone or brick base a timber



22. Primitive Egyptian Dwelling in the Plain.



Deserted Rock Dwellings, Kinver Edge.

Occupied Rock Dwelling, Kinver Edge.

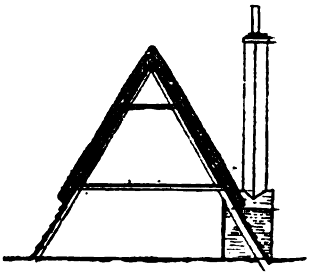
23. English Cave Dwellings.

superstructure of larger area could be erected. Where the desire was to mitigate the glare and heat of the sun, shade was obtained. Where the rains were heavy the walls of the lower parts of the building were protected. The balcony or verandah also formed a light, dry, open space, well above ground level and the attacks of animals and enemies. The overhanging storeys and eaves of the houses in the narrow streets of mediæval towns are historically familiar to us, and we know that the roof and waste waters thus fell beyond the line of the building; that soiled and other waters were thus enabled to be thrown into the centre of the street, where the gutter was then situated for drainage; and that foot-passengers were protected under the overhanging structure from these nuisances at the risk of encountering footpads from the doorways and dark recesses.

I have briefly passed in review these houses classified according to style architecturally, but it must not be supposed that salutarily they follow the same course. They represent the best class of dwelling-houses of wealthy owners, many of the common people still dwelt in dwellings more nearly approaching in type those of a prehistoric period.

Sir William Church, in his Address in Medicine at the meeting of the British Medical Association, at Oxford, in July last, said: "The Tudor and Jacobean architects understood much better the principles necessary for healthy life; we can have no better examples than those around us here. The Colleges are laid out with spacious quadrangles freely admitting air and sunlight surrounded by sets of rooms which are for the most part open to the air on both sides, and seldom more than three storeys in height." He then animadverted upon the piles of brick and mortar that are now built round central wells, from which sunlight and wind are excluded, and into which a little daylight and air struggles with difficulty. And he further expressed regret to see on the outskirts of towns, and even in rural villages, rows and rows of houses being erected on the plan of third-rate London streets, without ground around them, and the space restricted to the minimum allowed by the bye-laws of the Sanitary (?) Authority—bye-laws unsuited to the locality, and injurious to the district.

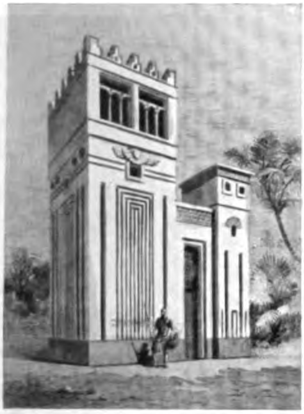
But even of the spacious days of the



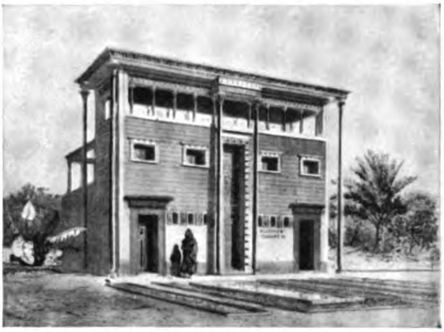
24. Section of House at Scrivelsby.

MEDITERRANEAN HOUSES.

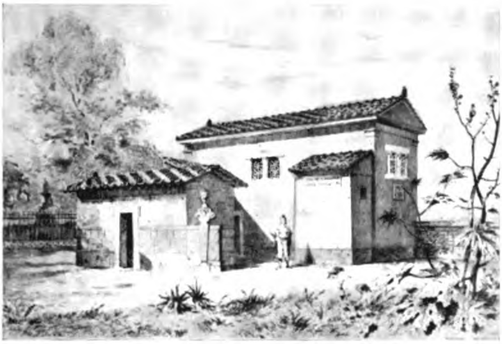
(EARLIER).



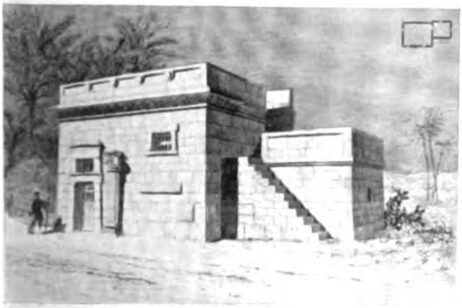
38. ASSYRIAN.



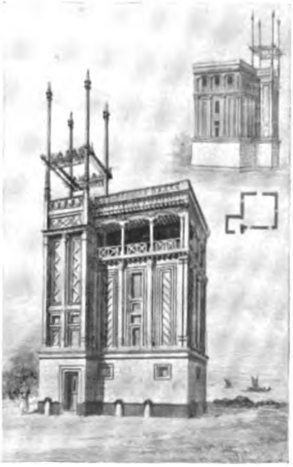
40. EGYPTIAN.



42. GRECIAN.

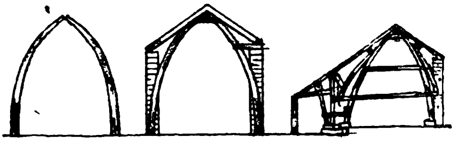


41. HEBRAIC.



39. PHŒNICIAN.

Tudors history tells us of the unhealthy dwellings of the common folk, the flimsy shanties with clay floors covered with dirty rushes, the hearth in the centre with smoke-hole above and wind-hole at side. But this was the period when matters began to improve, a period which produced the first Poor Law, first paid attention to the conditions under which the peasantry lived.

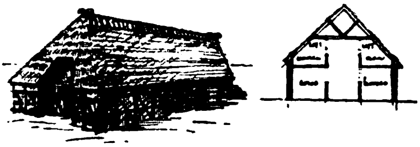

25. Crucks. Jackson's Farm, Treeton. Section of Barn, Bolderston.

It is appropriate here to mark some advances made in and about dwelling-houses as they happened chronologically. The introduction of glass first took place in the third century, but only for church use; in the twelfth century it was imported as a luxury for the rich, and in the sixteenth century it began to come into more general use. During the seventeenth century much more care was devoted to the construction of dwelling-houses. In Queen Anne's reign (1702–1714) party walls in London were directed to be made of brick or stone, and proper floors were made. Modern paving commenced in the same century, and the Westminster streets were paved about 1762. In the next century, in 1817, the General Paving Act of the Metropolis was passed, and in 1850 the window tax was abolished. Impervious circular drains were introduced about the same time, the abolition of cesspools commenced, and, later, the concreting of basements and the insertion of damp courses.

The progress of advance in construction may be traced through the Building Acts of 1845, 1846, and 1855, and its several Amending Acts passed from time to time, until we reach the existing Act of 1904.

Following on from chronological developments, we now pass to the present position as regards buildings and health, dealing firstly with open space about buildings, or external light and air, then with internal light and air, the treatment of the dwelling as a unit, and the consideration of special classes of dwellings and work-places, and concluding with suburban and rural buildings.

The width of streets is mainly subservient to the exigencies of traffic, and in different cities and towns at home and abroad the regulations vary. Since 1857 in London no new street for foot-traffic only may be less than 20 feet, and for carriage traffic less than 40 feet wide; and since 1894, L. B. A., sec. 13 (2), an important line of street communication may


26. Saxon House (Frisian type.)

be required to be extended to 60 feet in width, except within two miles of St. Paul's Cathedral. Every new street must have at least two entrances of the full width of the street "open from the ground upwards"; the entrances must be at both ends, and must open into two different streets. These requirements are intended to secure the free passage of the "circumflant air"; and this expression of Evelyn's justifies the use of the term "circumflation" of the islands of buildings as one of the principal objects to be aimed at in the laying-out of streets from a health point of view.

Although a new street must have an entrance at each end, and the entrances must open into two different streets, yet a coach-and-six is often driven through this statutory provision by constructing a block of buildings in the middle third of a rectangular space open at one end and closed at the other so that the roadway round the centre rectangular block commences and ends in the same street; the only precaution necessary is not to call this roadway a street, and to rail it off from the public street by gates (*See plan, page* 146).

27. Circular House of Pelasgian Peasant.

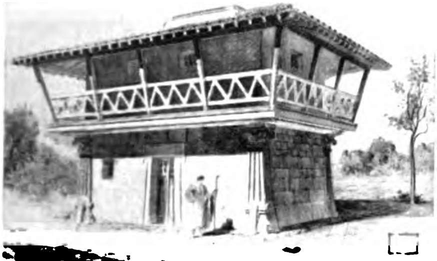
But more important still is the relationship of the height of buildings to the width of streets, so as to allow the free play, not only of air, but also of daylight and sunlight. In the southernmost climates the inhabitants endeavour to avoid the direct rays of the sun, in the more northerly they seek to bask in them, but the shadow cast by the sun rapidly lengthens as we proceed northward, so that it becomes utterly impracticable to be guided by it in adjusting the height of houses to the width of streets, and there is the additional variation that the orientation of streets imparts to the incidence of the sun's rays even in the same degree of latitude.

The incidence of sunlight depends upon the latitude of the place, the orientation of the street, the hour of the day, and the season of the year. If we take London, which is in latitude 51° 30′, and the north side of streets orientated east and west, and the hour of the day at noon, we find that the declination of the sun at the end of the third week in June, the summer solstice, is approximately 23° 27′ N., and at the end of the third week in December, the winter solstice, is approximately 23° 27′ S. So that the arc of 90°, less the latitude 51° 30′, plus the declination if it be north and minus if it be south, will give the angle of incidence of the sun's rays.

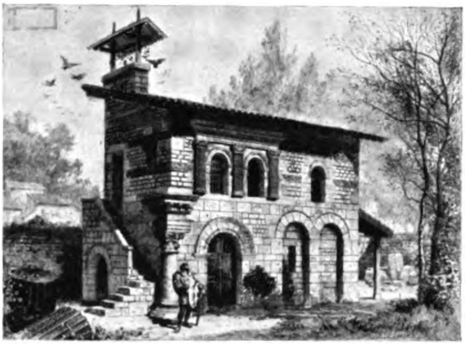
PLATE IV.

MEDITERRANEAN HOUSES.

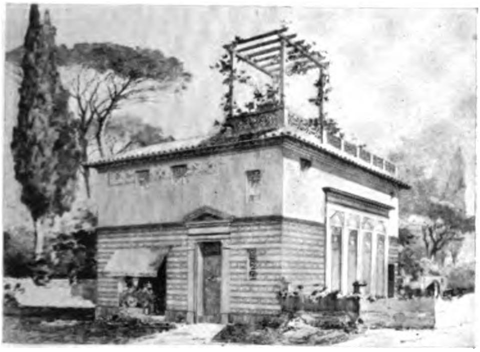
(LATER).



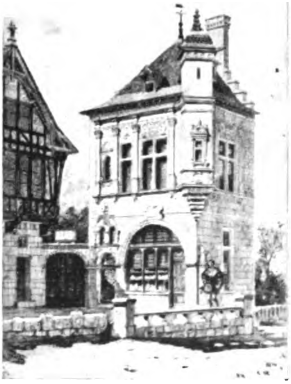
43. ETRUSCAN (*Preceding Roman*).



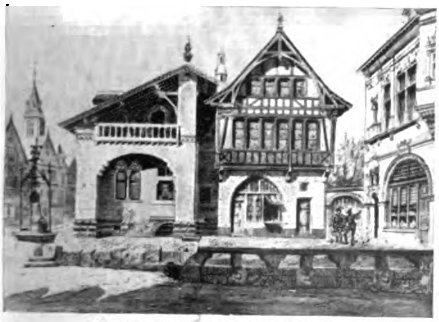
45. GALLO-ROMAN.



44. ROMAN.



47. RÉNAISSANCE.

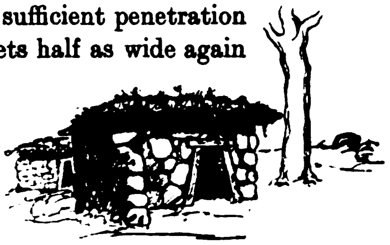


46. ROMANCE-MEDIÆVAL.

At midsummer the angle above the horizon is 61° 57′, and at midwinter 15° 3′. Therefore the angle of sunlight at midsummer at noon, approximately 62°, nearly reaches what is known as the London County Council angle or diagonal line (limiting the height of parts of buildings at the rear or not on the street), namely, 63½°, approximately a height equal to double the base. Obviously the high angle of sunlight at midsummer at noon is of short duration.

Sir Shirley Murphy, in his Annual Report of 1898 to the London County Council, published tables showing the width in feet of streets in the latitude of London necessary to secure one to six hours of sunlight upon houses 40 feet high situated in streets orientated north and south and at angles with the meridian increasing by 5° until reaching 90° of orientation, that is, streets orientated east and west, at the winter solstice (21st December), the vernal and autumnal equinox, and the summer solstice (21st June). From these tables I have calculated the proportion that the street would have to be widened beyond the 40 feet height of the houses to secure the amount of sunlight stated, that is, the figures by which the 40 feet height would require to be multiplied to show the necessary width in feet.

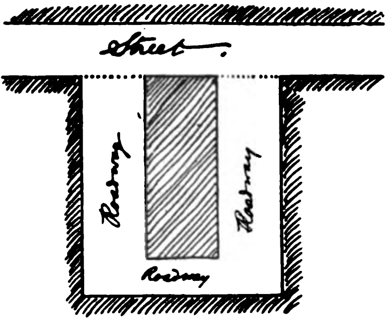
From the table on page 147, it will be seen that streets as wide as the houses are high will secure six hours sunshine in streets at all angles to the meridian at the summer solstice, and four hours' sunshine in meridianal streets at the equinox; the increase in the width to one and half times the height of the houses will secure six hours' sunshine in all streets at the equinox, and three hours in meridianal streets at the winter solstice; if the width of the street be increased to 2⅔ times the height of the houses, an additional hour of sunlight will be gained in north and south streets at the winter solstice, but it is not until the street is widened to 3¾ times the height of the houses that an hour's sunshine is obtained upon the lower parts of houses in east and west streets in mid winter. The angle of 45° for the fronts of buildings on the street, limiting the depth to the width, in London, is reached by the sun's rays near the end of the first week in September and April respectively, so that during about five summer months of the year they are above this angle, and during seven winter months below it. The angle at the vernal and autumnal equinox is 38½°. The angle of 35° adopted by Trélat in order to insure sufficient penetration into ground-floor rooms and to secure streets half as wide again as they are deep would obtain sunshine to the lowest point of the vertical line for about twenty-five and twenty-six additional days at each end of the summer



28. Square House of Pelasgian Peasant.

months extending the sunshine period nearly to twenty-eight weeks or approaching seven solar months.

Daylight on the other hand has in all latitudes, seasons, and directions the whole hemisphere of the heaven as its source, of which the arcs light a building according to its orientation, one quadrant of an arc from horizon to zenith lighting one side of a building and the other quadrant lighting the opposite side. The zenithal rays of the northern arc are the most luminous and actinic, and the horizontal rays the least. Trélat, in the *Revue d'Hygiene* for July last, regards the rays of the middle third of the arc as the most valuable for lighting interiors, because the strong rays of the zenith falling vertically scarcely enter the window, and the rays of the horizon which penetrate most deeply into an interior are the feeblest and least useful, whereas the rays of the median zone of the heaven possess neither the weakness of the horizontal nor the impenetrable direction of the vertical, but have an obliquity insuring a moderate distance of penetration and sufficient intensity to insure fair purification. In order to admit the parallel rays of the median zone into a ground-floor room, a distance equal to one and a half times its height, he is of opinion that the width of streets should be one and half times the height of the houses that border them. In any case there is a general consensus of opinion in most countries that streets of less width than depth are insalubrious, and the London Building Act of 1894 prohibits the raising of buildings in streets laid out since 1862 higher than the width of the street, and the raising of buildings in other streets higher than eighty feet without the consent of the London County Council.



The Metropolis Local Management Act of 1862, sec. 85, limited the height of buildings in new streets to the width of the street, the 45° angle, in streets of less width than fifty feet, but in streets of greater width there was no limit until it was fixed at ninety feet by the London County Council (General Powers) Act of 1890, an angle of about 62°, strangely enough, coinciding with the angle of the sun in its highest point at noon at midsummer. This height was again limited to a maximum of eighty feet by the London Building Act of 1894, equal to angle of about 58°, except by special consent. This was a distinct gain to the health of London (*See diagram on page* 148).

Stübben, of Cologne, in the 4th volume of Weyl's *Handbuch der*

Hygiene, has recorded in diagrammatic form the proportions between width of street and height of buildings required in twenty-four continental cities, and the angle of 45° predominates.

While the width and depth of streets regulate the height of the front face of buildings bordering upon them, the height of the rear face must be separately provided for. At the passing of the London Building Act in 1894, Dr. Longstaff struggled hard for the adoption of the Liverpool angle of 45° at the rear of houses; that is, a vertical height equal to the width of the horizontal space opposite, the angle that also governs most cases of ancient lights. But an angle of 63½° only was obtained; that is, a vertical height equal to one half the width of the horizontal space opposite. It is true that in the case of two houses, whose rear boundaries back upon each other, that the two angles of 63½°, when measured from the rear boundary of each of the premises, will give a space between the rear faces of the two buildings equal to the height of the buildings; that is, a total angle of 45°. But this was discounted at the same time by allowing the diagonal line to be drawn over the building from the rear boundary of the premises at a height of sixteen feet above the level of streets laid out before the Act of 1894. So that the rear of the great bulk of the houses in London may be built in solid up to sixteen feet from pavement level, provided this interferes with no ancient lights.

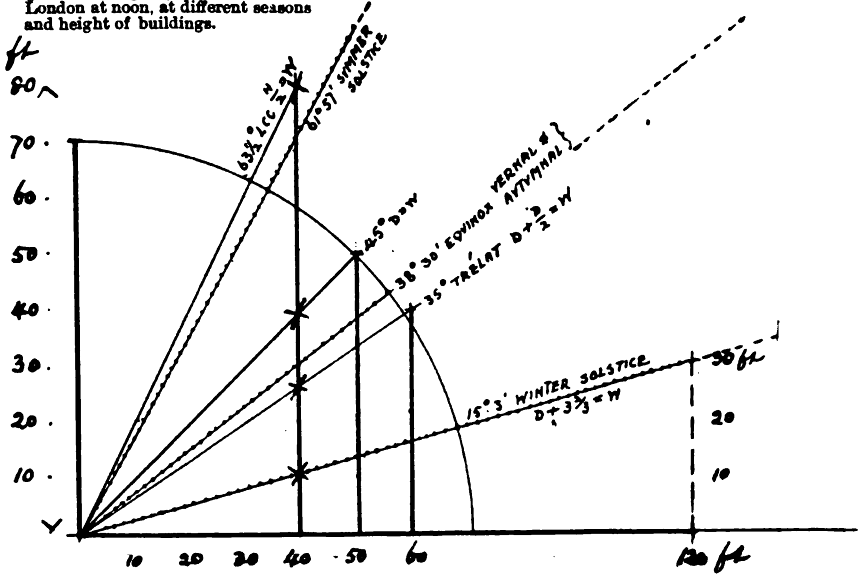
In February of this year Mr. Fletcher Moulton, M.P., K.C., introduced a Bill into the House of Commons entitled the Easement of Light Bill, but it was dropped at an early stage. This Bill was drafted upon a report of a Joint Committee appointed in 1900 by the Councils of the Royal Institute of British Architects and of the Surveyors' Institution. It prohibits the owner of a dominant tenement from claiming an extraordinary amount of light necessary for any particular purpose,. trade, or occupation, but confirms his title to such amount of light passing over the servient tenement as is reasonably necessary for the comfortable use and enjoyment of a house used as a dwelling-house, or for any other purpose. It enables an aggrieved

Number of Hours Sunlight.	WINTER SOLSTICE.		EQUINOX.		SUMMER SOLSTICE.	
	Streets N. and S.	E. and W.	Streets N. and S.	E. and W.	Streets N. and S.	E. and W.
1 hour	—	3·75	—	1·26	—	—
2 hours	1·04	3·90	—	1·28	—	—
3 ,,	1·73	4·17	—	1·31	—	—
4 ,,	2·68	4·65	—	1·35	—	—
5 ,,	4·25	5·54	1·07	1·40	—	—
6 ,,	7·62	7·62	1·44	1·44	—	—

owner by the service of certain notices and plans, instead of by physical obstruction, to prevent an adjoining owner from acquiring by prescription a right of light, and it prevents an owner acquiring a right to light passing over houses on the opposite side of a street.

What is the influence of this prescriptive right of light upon dwellings? Undoubtedly beneficial, and as the first decision appears to have been given as far back as 1761, it may have contributed together with absence of fortifications to the growth of London horizontally rather than vertically, a form of growth that according to M. Arnould largely accounts for the excellent sanitary condition of London to the astonishment and admiration of foreign hygienists. Its beneficial effect was vividly seen when, at the recent Congress of the Sanitary Institute at Glasgow, where the Prescription Act does not run, Dr. Chalmers, the Medical Officer of Health, kindly demonstrated in a convincing manner on the actual sites the difficulties he had to contend with in preserving the light and air of dwelling-houses in the slums. No ancient lights can be acquired over an adjoining site, and if that site is covered by a building which takes away the light and air from adjoining dwelling-houses and renders them unfit for human habitation, so much of those dwelling-houses must be removed as to provide open space on their own land of a width equal to three-fourths the height of the houses. This necessity of providing space for light (and air) on the same premises, instead of appropriating that of adjoining premises, probably accounts for the peculiar characteristic of most of the older Scotch houses, namely, the close.

Diagram showing angles of sunshine in London at noon, at different seasons and height of buildings.



H = Height of homes at rear, or not on street; D = Depth of stre.t; W = Width of street or base
L.C.C. rear angle, $H = \frac{W}{2}$; Working Class angle, D = W; Trelat's angle, $D = W + \frac{W}{2}$

This question of ancient lights has for years been a matter of serious discussion and is very complicated, but an excellent letter in the *Times* of the 16th January last, from Mr. Edmund Kell Blyth, of Gresham House, put the matter so succinctly that I cannot do better than quote it in full:—

> "Your correspondent, 'One Who Has Suffered' seems to be under the impression that the legal rule as to ancient lights is a survival of ancient feudal times. On the contrary, it is absolutely modern and created by statute in 1832. In ancient times the law did not sanction a man's acquiring ancient lights, and thereby depriving his neighbour of the right to build on his land, by an act done on his own which his neighbour cannot prevent.
>
> The very interesting Liber Albus of the City of London, a collection made during the mayoralty of Sir Richard Whittington of documents even then ancient, which has been recently republished in modernized language by the Corporation, contains FitzAlwyne's Assize of Buildings, written in 1189. It has the following passage:—
>
> > 'Of the Obstruction of the View from Windows.—If any person shall have windows looking upon his neighbour's land, although he may have been a long time in possession of the view from such windows aforesaid, nevertheless his neighbour may lawfully obstruct the view from such windows by building opposite the same or by placing anything there upon his own lands in such manner as may to him seem most expedient, unless the person who has such windows can show any writing by reason whereof his neighbour may not obstruct the view from these windows.'
>
> Coming down 400 years, we find in Croke's Reports (1589) a curious case, thus reported:—
>
> > 'Case for Stopping of his Light.—It was agreed by all the justices that if two men be owners of two parcels of land adjoining, and one of them doth build a house upon his land and makes windows and lights looking into the other's land, and the house and the lights have continued by the space of thirty or forty years, yet the other may, upon his own land and soil, lawfully erect a house or other thing against the said lights and windows, and the other can have no action, for it was his folly to build his house so near to the other's land, and it was adjudged accordingly. Nota.—Cujus est solum ejus est summitas usque ad cœlum.'
>
> The first recorded decision in which a right of lights was allowed was in 1761, in which Chief Justice Wilmot held that 40 years user of a window would induce a presumption that there was originally some agreement between the parties. The law so remained—Judges leaving it to juries to presume a grant of an easement—until 1832, when it was crystallized into statute law by the third section of the Prescription Act. This section was moved by Lord Tenterden, who merely said that Judges were often obliged to leave it to juries to presume a grant, and he thought it better to fix the period of 20 years by law. No debate took place, and no other person appears to have spoken on it in either House. Up to that time the City of London had enjoyed a special custom by which ancient lights could not be acquired by prescription in the City, which was swept away by Lord Tenterden's Act of 1832. Speaking in 1866, the late Lord Cranworth expressed his opinion that serious inconvenience might be felt by its abolition, and the general principle has been severely commented upon by such eminent Judges as Lord Bramwell, Lord Blackburn, and Lord Esher.
>
> I may perhaps add that England and Ireland are the only countries where an easement over a neighbour's property interfering with its use can be gained by prescription. In Scotland the right never existed. In the United States the English rule has been formally discussed and rejected as an anomaly in the law. Nor does it exist in France, Italy, or any country having a code founded on the Code Napoleon."

We usually associate external light, and air, and open space together mentally, and you will be perhaps surprised to hear that although there is a prescriptive right to light, there is no such right to the passage of air as an easement over another man's land (Potts *v.* Smith, 38 L.J. ch. 58); furthermore, that open space which in common parlance means open space upon the surface of solid ground also means in London building law open space upon the surface of a roof.

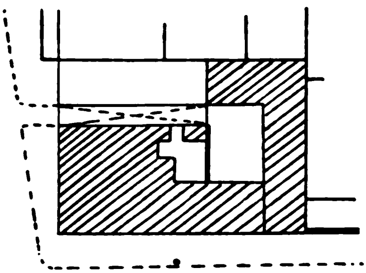
The Act requires, by sections 40 and 41, that for a domestic building erected in London after 1894, in an existing street, and having a basement habitable for sleeping or living purposes, there must be provided in the rear for the purpose of light and air an exclusive open space of not less than 100 square feet free from any erection thereon above the level of the adjoining pavement. If the building erected be in a new street, then in the rear there must be provided an exclusive open space of not less than 150 square feet, extending throughout the entire width of the building and to a depth of at least 10 feet from the building. Of this open space 100 square feet must be left open for a habitable basement. If the basement be not constructed to be habitable the open space at the rear may be entirely built over up to the level of the adjoining pavement, and if the ground floor be not constructed to be habitable the open space at the rear may be built over to a point 16 feet above the street level. There is no provision to leave any open space for the purpose of drainage, nor is any alternative provision made to cut off aerial communication between the upper and lower part of the building; indeed by section 74 aerial communication is expressly permitted. By successive Acts since 1855 the open space required at the rear of buildings has been successively shifted from the basement, through the ground floor level, to sixteen feet above the pavement. New buildings in large numbers are being erected on old sites, and enlarged so as to cover the whole surface by building over existing areas at the back up to 16 feet above the pavement, any previously existing air space being blocked out, and the two or more lower floors being built back to back. If the exigencies of a large city require this, provision should be made for prohibiting the lower parts of such houses from being used for dwelling purposes, that is, for sleeping and living purposes, as in a dwelling, and for structurally and aerially severing them from the upper parts.

It is easier to criticise destructively than constructively, but the London Building Act of 1894, whatever its demerits, has one great and abiding merit—it made the principle of requiring a fixed angle of light and air statutory.

NEW BUILDINGS ON OLD SITES.

DISAPPEARANCE OF OPEN SPACE.

BEFORE RECONSTRUCTION.



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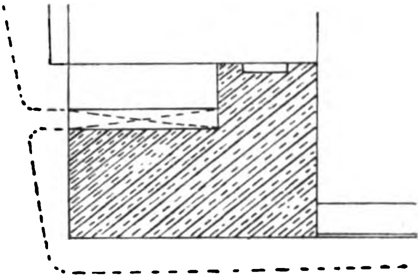

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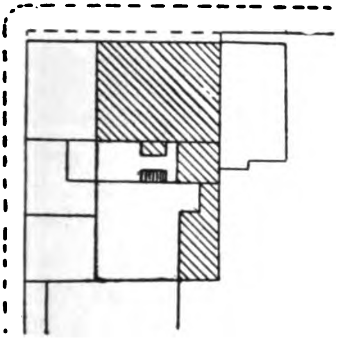

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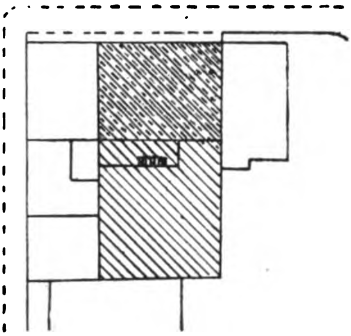

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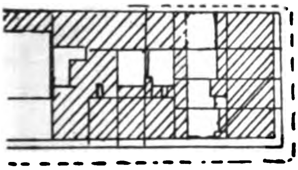

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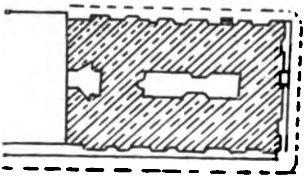
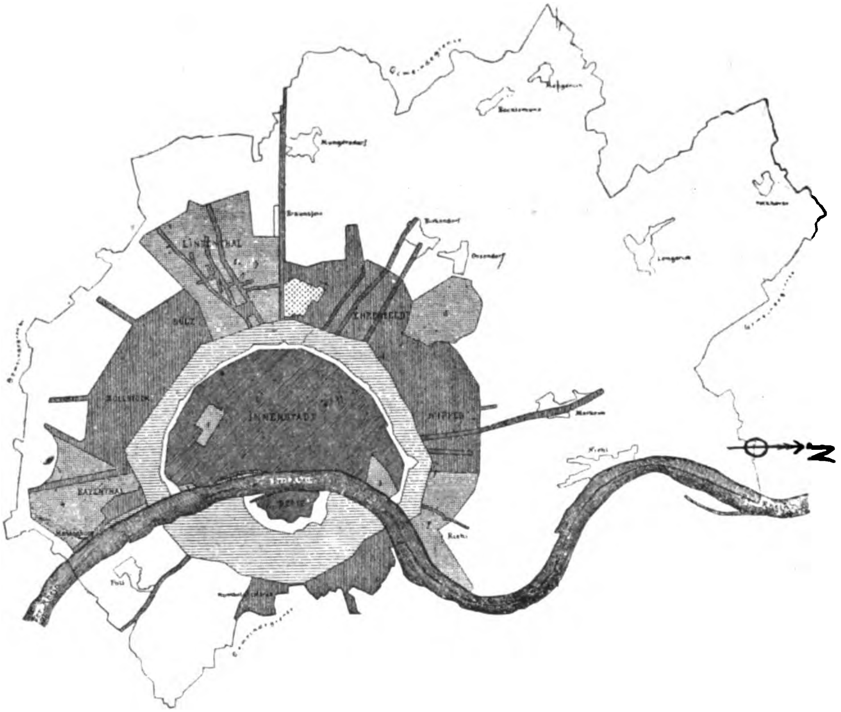


No. 3.

In Germany building regulations have been elaborated for protecting the public health from injury by the haphazard growth of large cities. Buildings continuously diminish in closeness as the distance from the centre increases, in order to allow breezes to blow from the country into the centre of a city, and the regulations progressively limit the height of the buildings and the proportion of the sites that may be covered. There is a system of "zonification." All over the Continent the houses in the central parts of cities are constructed in flats, and the flats on the different floors are arranged for occupiers of different status, so that as one proceeds up the house one goes down in the pecuniary scale, and the different classes of the population are more intermingled. There is a system of "stratification." London and our other large cities sadly require "zonification" and "stratification," and especially the exercise of some provision as to future extension.

It is not so easy to show by illustration the "stratification" as it is to show the "zonification" of a city, for obvious reasons, but any one who has lived in Paris will know the social difference between a person who lives *au premier* and one who lives *au cinquième;* for instance, it is like Mayfair and Soho, but does not lend itself to drawing vertically so readily as the horizontal.

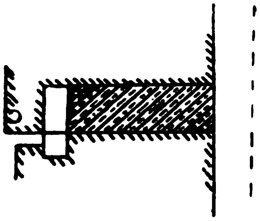


COLOGNE.

NEW BUILDINGS ON OLD SITES.

DISAPPEARANCE OF OPEN SPACE.

BEFORE RECONSTRUCTION.



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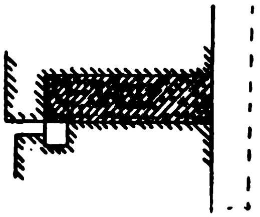

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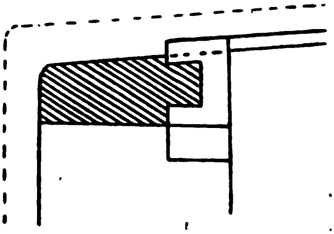

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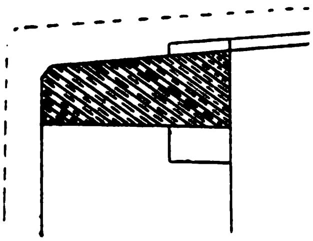

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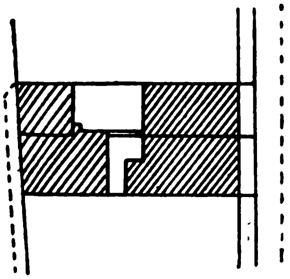

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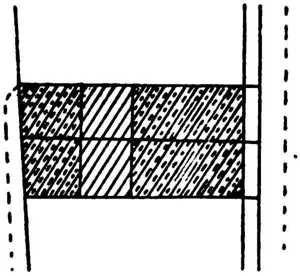
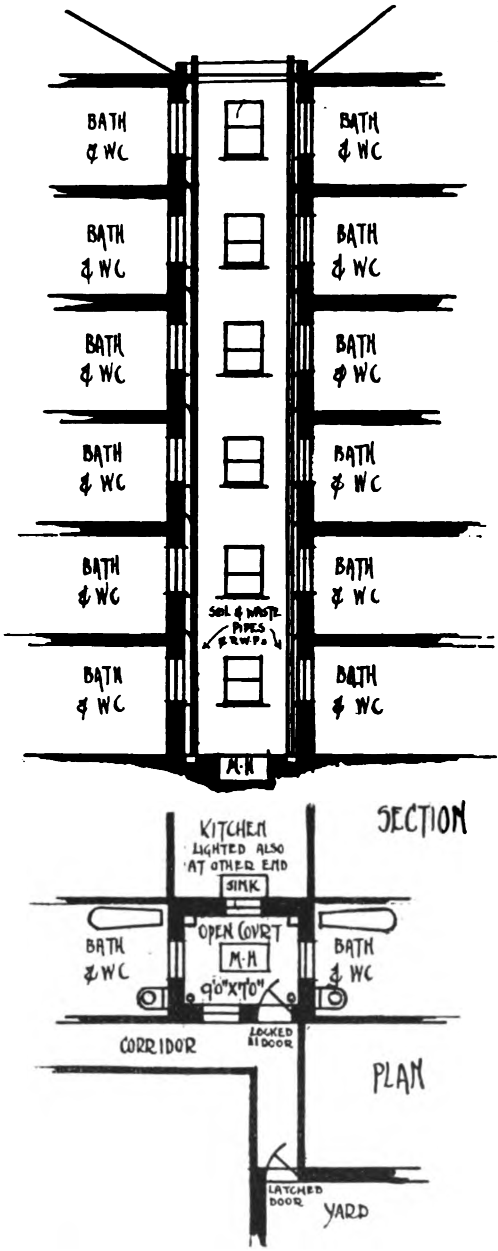


No. 6.

In order to obtain the admission of light and air into large buildings, especially large blocks of flats, open areas enclosed on all sides are found necessary in construction, and, in order to prevent these "courts within buildings" from becoming wells and to convert them into shafts, it is provided by sec. 45 of the London Building Act that where the depth of the well from the top of the parapet to the ceiling of the ground story exceeds the length or breadth of the court, adequate provision for ventilation must be made by means of a communication between the lower end of the court and the outer air. Unfortunately adequate provision is not defined as to proportion or sectional area, neither is it provided that the communication with the outer air shall remain permanently open, and there appears nothing to prevent such communication from being closed by one or more doors or windows, and being kept closed for long periods or permanently.



This condition of things is illustrated in the diagrammatic section and plan of an unventilated deep well or court within a building constructed as shown. On two opposite sides of this well, six stories high and about 9 ft. by 7 ft. in area, are situated the water-closets and baths, on a third side the kitchens, and on the fourth side the staircase corridor. Into this deep well all the drainage of these several places discharges. In the basement is a door to the well permanently locked, and at the end of a corridor leading to the open air is another door, closed except for entrance and exit into the open yard.

With regard to the kitchen windows opening into this well, by paraphrasing sec. 45, par. 2, of the Building Act, we obtain this result: a habitable room above the level of the ground storey having one window directly opening into the external air elsewhere than into a court enclosed on every side may be so constructed as to have a second window opening into a court enclosed on every side whatever the width, or breadth, or length, or depth of such court, and such window *may* be made to open, and if the total window area do not equal one-twentieth of the floor space of the room *must* be made to open.

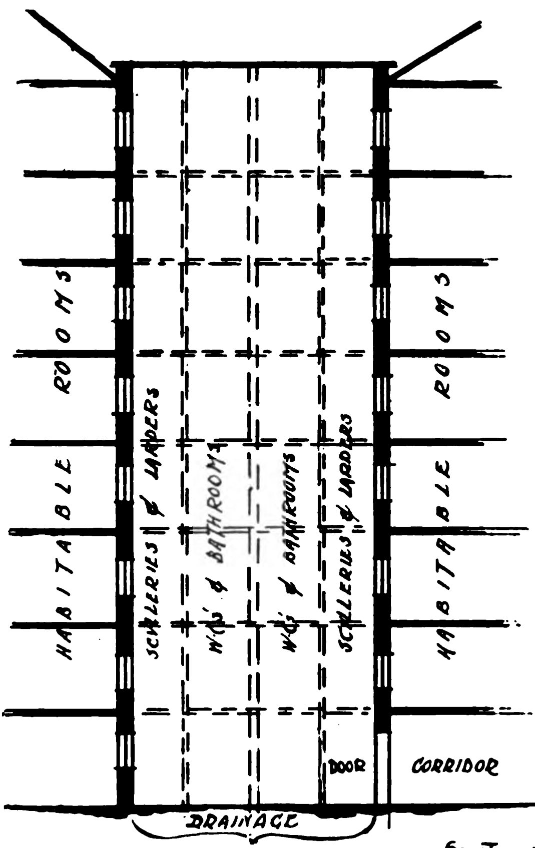
As to what are habitable rooms, sub-secs. 37 and 38 of sec. 5 of the London Building Act, 1894, define a habitable room as a sleeping-room or a living-room, and the Instructional letter of the Building Act Committee of the L.C.C. of the 15th December, 1894, names the following as *not* to be regarded as living-rooms: scullery, wash-house, store-room, pantry, larder, glass-closet, beer or wine cellar, water-closet, lavatory, bath-room. In the Public Health (London) Act, 1891, the expression "sanitary convenience" includes water-closets, and any similar conveniences. A beer or wine-cellar, glass-closet, or store-room are "storage-places." A lavatory and bath-room is a personal convenience, and a wash-house is a domestic convenience. The larder, pantry, scullery, and kitchen are food-places, or places where food is kept or prepared. The kitchen is also a living room, and under the same definition would fall other rooms, such as breakfast, dining, and drawing room, workroom, school-room and nursery.

The proviso in the Act worded negatively thus: "No habitable room not having a window directly opening into the external air otherwise than into a court enclosed on every side" is insufficient protection. There is no doubt in my mind that habitable rooms should not be permitted to be aired from unhealthy enclosed wells, however much they may be so lighted, and no such windows or lights should be so constructed as to open. And I would go further and say that it will be much better for the health of flat-dwellers if all such wells were required to have permanent openings at the bottom as well as the top, for without this provision I cannot conceive how they can be otherwise ventilated than through the dwellings that surround them. Many are undoubtedly so ventilated at the present moment, and flat-dwellers are beginning to complain.

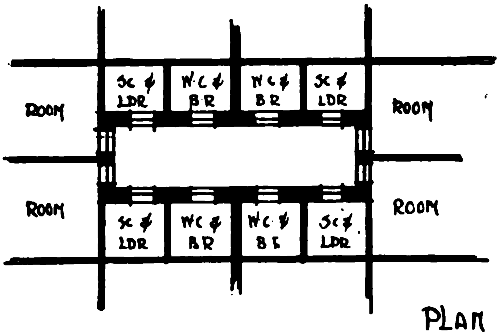
If there be adequate ventilation (whatever that may mean or not mean) at the bottom of an enclosed court, it would appear that the area and dimensions of the court are governed by the kind of rooms or places having windows opening into it. So that if it have windows of habitable rooms opening only into the two opposite ends of a rectangular court, then as the width is not defined the width may be reduced to a few feet across. So that it is possible to have an internal court, 80 feet high, 40 feet long, and 10 feet wide, with the windows of habitable rooms (especially servants' bedrooms) on the short sides, and the windows of w.c.'s, bath-rooms, sculleries, larders (where food is kept), etc., opening into the long sides. And such habitable rooms as have windows opening elsewhere can also have windows opening into the long sides of such a court into which all the drainage of the building may discharge.

However, before 1895 there was no provision whatever as to central enclosed wells, and town-dwellers have much to thank the Act of 1894 for commencing to regulate these "courts within buildings." Experience is teaching us that protection in this direction requires to be amended and supplemented.

There is another form of court within buildings, namely, that open on one side. This is provided for in the Act by requiring that no window of a habitable room, not having another window opening into the external air elsewhere, shall open into such a court below the point at which the distance of the opposite wall from the window is less than half the height of the opposite wall from the level of the cill of the window to the top of the wall. But then the air conditions of a court open all down one side are infinitely better than those of a shaft open only at the bottom, and better still than those of a well closed at the bottom.



SECTION



PLAN

This brings me to the consideration of what is usually termed in our text-books and in our conversation—ventilation. It is unfortunate that this term should be used in so many different senses, so that two persons discussing the subject from an architectural point of view seldom start from the same basis. I have already shown that what is known as right of "light and air" resolves itself into right of ancient lights and not of air, and it can be further shown that the behaviour of the *atmosphere* outside a building, and of the *contained air* in an enclosed space are quite different, so that in architectural construction one has to have in mind: circumflation round a building, perflation through a building, ventilation within a building, and disconnection aerially from the interior of a building.

With these four requirements one begins to realise more clearly the task to be accomplished by architectural construction in maintaining the purity of the air of our domestic buildings. Circumflation has already been dealt with. In the ordinary type of domestic building, constructed to be occupied as one dwelling, and having windows on at least two sides or fronts, on one of which the windows of the staircase also open, perflation can be obtained horizontally through each of the floors by means of the rooms, and when perflation cannot be so obtained the staircase will provide both vertical and horizontal perflation, but in the house constructed in flats the separate dwellings have no internal staircases, and are entirely dependent upon horizontal perflation from one front to another of each of the separate dwellings themselves. The London Building Act by sec. 69 happily provides that in buildings constructed or adapted to be occupied in separate tenements the common staircase must be ventilated upon every storey above the ground storey by windows or skylights, or be otherwise adequately ventilated. Windows are a means of ventilation, but do not necessarily provide permanent ventilation; it is remarkable what a large number of persons utilise windows for the purpose of admitting light only, and fear the admission of air. We ought to distinguish in our Acts between the admission of light and the admission of air, and the potential admission or exclusion of air and the permanent and continuous admission of air beyond the power of exclusion by haters of fresh air living on common staircases. The complainants of draught in the staircases of flats generally secure the closing of all the windows.

Flat-dwellers appear to be acquiring the habits of cave-dwellers in their exclusion of fresh air from their dwellings. It is remarkable that a much larger proportion of the class who live in flats dread the entrance of fresh air than of any other class of persons. They appear to be attracted to flats in order to be able to indulge their troglodytic instincts, and it is easy to convert a flat-dwelling into a true cave-dwelling, the occupants of which have no recuperation derived from the wild or open-air country life led by true troglodytes.

There should be provision for the perflation of corridors and passages as they are horizontal in direction, and this particularly applies when they are internal and have no means of vertical ventilation, and are entirely dependent upon horizontal ventilation, they specially require the means of independent admission of air. Internal corridors without light and air are an abomination. If open at one end to a window the condition is better. If they are open on the long side the condition is good, as the windows enable not only the corridors to be lighted and ventilated, but also permit of additional openings being made into the rooms abutting upon them and having windows upon another front, so as to secure efficient perflation.

There is one other point in reference to through ventilation, which I prefer to call perflation for many reasons. It is that without proper open areas there can be no proper perflation of under-ground storeys of buildings. This is so obvious that it requires merely to be stated.

It is too readily assumed that because windows admit light they therefore admit air. Wind-holes, as they were originally called, admitted both wind and light, but when they were filled in with glass they excluded air even more effectually than the walls; in fact, they became transparent, impervious parietes; and the glass partitions often found fitted in city offices remind us forcibly of this when we breathe the stagnant air imprisoned by them. In fact in our legislation, regulations, and instructions, the admission of light and the admission of air require to be both distinctly provided for, and the potential intermittent admission requires to be distinguished from the permanent continuous admission. There may be an advantage in glazing a door, or a shutter, or even a wall to admit light, as in the case of borrowed lights, where the movement of air is otherwise efficient; on the other hand it may be desirable to prevent a glazed surface being so constructed as to admit air. For instance, in the stallboards and gratings directly opening into underground baking-rooms and restaurant kitchens admitting dust and dirt directly from the street into such rooms where food is prepared. Where a sufficiently deep open area exists the case is different, as dust and dirt may be excluded by the insertion of hooded and winged windows. One sometimes hears it said when windows are broken in tenement houses that this is beneficial in admitting air; it depends upon where the windows are broken: if on the staircase it is generally beneficial, but if in dwelling-rooms it generally leads to the exclusion of both air and light by the closing of the aperture with paper or rags. In fact permanent openings in dwelling-rooms are frequently permanently closed; elsewhere they are less likely to be obstructed, and there also they should be so constructed as to be difficult to obstruct.

The natural and original habitat of man is the open air supplemented by means of shelter against weather as circumstances temporarily require. Unfortunately many persons take a reverse view of healthy existence, and regard the house as man's natural habitat. To go out of the house is looked upon by them as a concession, and to admit fresh air in abundance into and through the house is regarded by them as a dangerous proceeding. It never seems to occur to them to protect themselves by warmer clothing, or by any other screens than closed windows and doors.

It appears to be the fashion at the moment to construct houses, especially country houses, with wide low windows, so low that at least a third of the room above the windows cannot be directly lighted or ventilated. There is less objection to this if special provision is made to ventilate this upper part, but the diminished penetration of light does not make for health. Probably the fashion finds its greatest supporters amongst æsthetic housewives apprehensive of the effects of sunshine upon the colours of their artistic interiors. But some male æsthetes are also apt to overlook the fact that you cannot have a completely healthy mind in an incompletely healthy body.

There is a further important practical point in connection with ventilation that is constantly overlooked. It is that when individuals in the interior of a building have sufficient air space surrounding each of them on all sides diffusion of the air can have proper play for dilution; this is the condition contemplated in the ordinary consideration of natural ventilation and diffusion, but that when large numbers of individuals are closely packed together, as in a public building, there is temporary and extreme overcrowding, utterly beyond the powers of diffusion and natural ventilation, and nothing short of mechanical removal and renewal of air can effect a sufficient change. It is necessary therefore to recognize the essential difference between the ventilation of overcrowded and undercrowded interiors, between the overcrowding of cubic space, and the overcrowding of floor space although the aggregate cubic space may be more than ample.

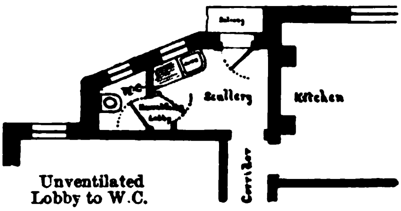
Where theatre-goers retire to the foyer or lounge between each act of a play as is done in France, and scholars to the playground between each class as in Germany, and the theatre or classroom is flushed with fresh air through open doors and windows for ten or more minutes in every hour, the conditions are much simplified and improved.

Sunken open areas are provided to basements for the purpose of admitting light and air, and of excluding dampness and effluvia from the adjoining soil. As such areas require to be drained and cleansed they are usually made several feet in width so as to be accessible. Such open areas are wet areas in contradistinction to "dry areas," which being covered areas and not usually requiring draining and access for cleansing are narrowed to a few inches, but not so where light and air are required. Open areas are unfortunately often covered in and taken in as part of the house, especially back areas of dwelling houses. The result of this is that even if light and air be admitted by skylight, and the structure be not carried up more than one floor, yet the other objects of the open area are defeated, the retaining wall does not exclude dampness and effluvia, the movement of air below the basement flooring no longer takes place, and the ventilation of the basement itself is less effectual. The proper course to pursue when the sunk open area of a dwelling-house is covered in would be to require a further area to be made beyond in order to preserve the sanitary condition of the dwelling-house. It is well for us always to bear in mind that a sunk open area is much less effective for perflation and ventilation than an open space that is above ground level, because it is blocked at both ends, and also has a wall on its outer side of a greater or less height; in fact it acts more as a down cast shaft to the basement, the house acting as an upcast, like a mine on a smaller scale, and in its absence the basement becomes a well fit only for storage purposes. If used only for storage or temporary or intermittent purposes other than continuous dwelling or working, damp and effluvia can of course be excluded by a vertical damp course without any area or interspace, but it is unnecessary to pursue this further at present.

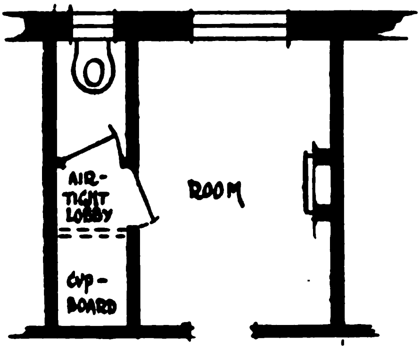
Wet and dampness are excluded by a water-tight roof, sound coping, and guttering above, and below by an impervious basement surface, impervious damp course in or below all walls, and earth pushed back from outer walls above the damp course. Thus briefly put these requirements secure dryness, but the last calls for some further consideration. When the lowest floor surface of a building is above the level of the surrounding ground surface the fullest conditions of dryness are secured, not only because earth is not in contact with the walls, but also because the natural play of sun, daylight, and air upon the outer walls have their fullest scope. In proportion as the floor of a building is lowered below the surrounding surface, so these natural beneficial influences are reduced, and the higher the contact of the earth against an outer wall the greater the extent of dampness, even to wetness.

The mode of preventing the earth from coming into contact with outer walls is by the formation of these so-called "areas." It is most unfortunate that such an indefinite term having so many different meanings should be applied to a definite piece of work. Clearer definitions are required of the vague term "area," which, like charity, covers such a multitude of sins. The word "area" as applied to buildings and curtilages means *any plain surface within boundaries*, and without proper qualifying words is most misleading when used in architecture. Such qualifying words as open, partly covered, wholly covered, closed, sunk, etc., should always be used in description, and be shown clearly or annotated on plans and sections.

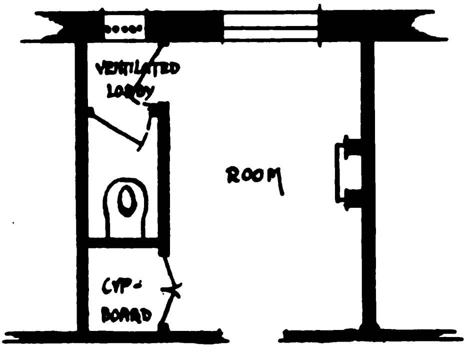
For disconnecting certain parts of a building, air serves. For disconnection between the soil and the basement floor; (2) between the soil and the side walls; (3) between one dwelling and another in the same building; and (4) between a w.c. and the interior of a dwelling. The last of these is the only form of disconnection not yet touched upon. There are very stringent bye-laws in London with regard to the construction of water-closets, and it is right and proper that there should be. At the same time it is difficult to understand why it should be made impossible to construct a water-closet in a sunk open area of less than forty superficial feet in extent, and less than five feet across. The objects to be aimed at are ventilation of the closet in the open air, and disconnection from the interior of the dwelling and building, and these two objects can be obtained by excluding from the present onerous and frequently impossible conditions of improvement, any closet constructed so as to be approached from the open air by means of an open space or open lobby of considerably less area than the present requirements. Contrast this excessive requirement of aerial disconnection with the fact that a water-closet may be approached from a room used for habitation, or preparing food, by means of double doors enclosing an unventilated lobby reduced to the smallest size, if the words "approached directly" simply mean fixing a second door to a framework between which and the water-closet door there is no provision for ventilation in the bye-law. One of the points against which French architects of eminence are constantly railing, is the multiplication of doors and internal lobbies without ventilation so commonly found in French houses. May we be spared from this unhealthy condition.



I always thought that when a barrister "sported his oak," and his chambers were approached through two doors, that they were "directly approached" from the staircase, but it appears that this is wrong,



UNHEALTHY PLAN



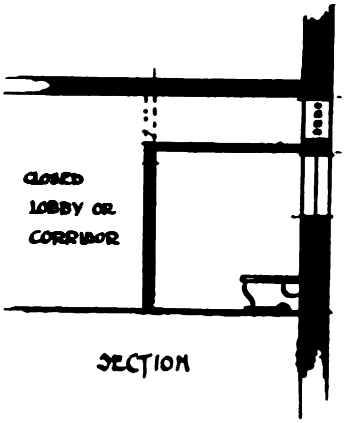
HEALTHY PLAN

at least in the opinion of some architects, surveyors, and builders, whose method of construction passes unchallenged. My object in bringing these architectural points forward is to show how much we all have to learn, and that we should endeavour to maintain open minds and adapt our methods and bye-laws to experience.

The remarkable thing is that the Sanitary Accommodation Order for Factories and Workshops issued on the 4th February, 1903, by the Home Secretary, requires that every sanitary convenience shall not communicate with any work-room except through the open air, or through an intervening ventilated space.

So that work-rooms are actually better protected than dwelling-rooms, and rooms or places where food is kept or prepared.

In accordance with the Building Act, a w.c. must be constructed against an outer wall. But if in some houses the w.c. and entrance lobby were turned round so as to be constructed against an inner wall, the condition would be very much improved, as the entrance lobby could be left open to the air, or permanently and amply ventilated in such a manner that the w.c. would be aerially disconnected from the dwelling, instead of as at present being directly connected with it by means of an air-tight lobby. The present architect of the London County Council, Mr. Riley, has adopted this method in some buildings with good results, but it is doubtful whether the w.c. can be truly said to be against an external wall, as required by the bye-laws.



SECTION

The sole objection of any value raised against the aerial disconnection of sanitary conveniences from the interior of dwellings, is that it would be inconvenient for invalids or during the night. But surely the proper way to meet such contingencies is the old custom of providing an invalid's or night-commode.

There remains the suggestion that a closed lobby or closed corridor into which a w.c. opens may be ventilated, when the height allows, by boxing in the upper part of the w.c. and so obtaining through a conduit the independent access of external air to the lobby or corridor. It is obvious that this is not very satisfactory, and at the best can only be regarded as a makeshift. The probability is that later on the open-air conduit over the w.c. will be found to be used as a cupboard or store-shelf, or otherwise effectually blocked against the admission of air.

Having provided external air, or, as the French more appropriately call it, atmosphere, and natural light to the building, and having excluded dampness and effluvia from the house, and supplied means of aeration of staircases and passages, it remains to provide specially for the dwelling. The new domestic building from the one side is controlled by Building Acts and Bye-laws; from the other side both the old and new domestic building is controlled by Health, and Housing Acts, and Bye-laws. The house is the unit of legislation; it is true that in the case of underground dwellings the dwelling is the unit, but the dwelling as a unit of sanitary legislation and regulation could be pushed with advantage very much further than at present.

The essential parts and appurtenances of a dwelling in the present day, reduced to an absolute minimum, are habitable rooms with proper means for lighting and ventilation, cooking range, tap and sink, larder or recess for food, open space for refuse, and w.c. accommodation. Certain questions arise here: Should a habitable room be required to have a fireplace? Happily, architects recognize the value of chimney-flues as a means of outlet ventilation apart from heating, and few rooms in towns are constructed without fireplaces, either in this country or on the Continent. In a room without a flue the amount of cubic space per head might be increased in our bye-laws as to registered houses, and in any statutory definition of "overcrowding" as a nuisance, which definition still appears as distant as the Greek Kalends. Of course, if the provision of a cooking-range were made compulsory in a dwelling, one room at least would have a flue.

The Physical Deterioration Committee, in their Report of this year, recommended that "it should be provided by law that every dwelling let for the occupation of a family should include a grate suitable for cooking." Cooking requires the washing of food before, and washing-up after a meal. Is it permissible to fix a tap and sink in a habitable room? In Scotland it is the common practice. At the Conference of London Municipal Authorities in July last, it was resolved "that a draw-off tap from the rising main, and a sink, should be provided on every floor of a tenement house." If one could insure that sink wastes were aerially disconnected from drains, and that slops containing liquid excrement would not be thrown down sinks in rooms, it would be less objectionable. In Scotland the latter objection is avoided by the provision of a w.c. on every floor.

It should also be a regulation that provision for food storage should be made in every dwelling by means of a properly ventilated and protected food-cupboard, recess, or larder.

Another important point is how far a w.c. may be put to other uses. Is it permissible to place the only draw-tap and sink of a dwelling in a w.c.? Should we report against a draw-tap and lavatory basin being placed in a w.c., such as we see in many of our friends' houses, and perhaps our own? Is it right to place a bath with supply taps in a w.c.? May a copper be placed in a w.c.? In other words, can we recognize the combination of w.c., and lavatory, and scullery, and bathroom, and wash-house, remembering that a lavatory basin may be used as a scullery sink, and a bath used as a copper, and that any draw-tap may be used to draw drinking water? These are questions that we as guardians of the public health are required to express definite opinions upon. Have we formulated any, and if not, why not? Where are we drifting in the complications arising from the compression of dwellings into flats in our large towns? Do you now perceive how necessary it is for us to be acquainted with methods of architectural construction?

This subject concerns a large proportion of the duties of a Medical Officer of Health. Many well-known works on public health will tell you that the great Sanitary Act of 1866 was the real beginning of definite sanitary legislation, and this was the result of successive inquiries. No doubt the many inquiries into the housing conditions of the working classes aroused public interest; but what impelled parliamentary inquiry was the death of the Prince Consort at the end of the year 1861 from typhoid fever; and what first stimulated Parliament to frame the Public Health Act of 1875 was the dangerous illness from the same cause of our present beloved King in 1871. The symbol of nationality is the Sovereign, and the dwellings inhabited by the Sovereign have always been of most serious concern to the Empire and the Legislature. Let us not blind ourselves by scientific analysis to this natural impulse to protect the homes of the highest as well as of the lowliest.

In constructing the dwellings of a community, various classes of persons and requirements have to be provided for: according to worldly possessions, from the wealthy to the poor; according to size, from the palace to the cottage or flat; and according to surroundings and locality, the house is detached, semi-detached, or terrace-built, in one or more storeys, and sub-divided vertically or horizontally, or both, to provide the kind of dwelling desired.

Amongst the working classes, according to marital condition, dwelling-places are required for:—

1. Single men.
2. Single women.
3. Childless married couples.
4. Families of parents and children.
5. Widows with children.
6. Widowers with children.

The self-contained house, sub-let in separate tenements, is available for all these differently circumstanced groups of persons, and it is against this method of herding the different elements of the working-class population together, that the essential point of the housing question is directed. Life in a tenement house most frequently resolves itself into living in a house where the domestic and sanitary conveniences are used in common by the occupants, without the control of a landlord, keeper, or deputy.

It is the marital condition which mainly decides the class of dwelling required, and the class of dwelling available must influence the marital condition. The difficulty and expense of housing families in towns must largely influence the marital condition of the nation, and unfavourably influence the birth-rate; a serious matter in itself, but still more serious when the mortality of those infants that are born is raised, partly by the unsuitability of the dwellings in which attempts are made to rear them. A diminished birth-rate and an increased infantile mortality is a serious matter. Hence I have always, in speech and writing, laid stress on the fact that those philanthropists who make things more comfortable for single men, encourage the diminution of the marriage-rate and of the birth-rate, and tackle the easiest part of the housing question, providing for single men, who can most easily house themselves.

Widowers with children are in a more difficult position, but the only example of provision being made for this group is the "Family Home" of the Glasgow Corporation. The home was also intended for widows with children, but they do not appear to avail themselves of it. This accords with the view that women cannot be housed in common to the same extent as men. The woman's home, and especially her bed-chamber, is sacred to her, and she cannot bear intrusion or common use of certain parts of her dwelling, which does not prevent her from being, outside her home, an eminently sociable and even clubable person.

Of my six groups, the first and the last are free from women; into all the rest the woman enters. Homes and clubs for single women are springing up, but on different lines from those of men. The common dormitory, or separate cubicle system, is impossible for self-respecting women; a woman's separate bed-chamber is indispensable, and on this line they will prove no doubt successful. The same applies to childless married couples, and to widows with children; these two last groups should assimilate well together with mutual benefit. There remains then the provision for families consisting of parents and children, what may be termed *growing families*. This group should engross the attention of all who desire the welfare of the nation; the cultivation of family life is the basis of national existence.

The Bishop of Manchester said a few months ago: "Any community in which the children were neglected all day by their mothers, could never make up for the neglect by building schools. *There is more hope for the country from the improvement of our homes than from any other source.*"

Hence, whilst it is desirable to improve the common lodging-houses and cubicle lodging-houses for single men, and make homes with separate bedrooms for single women, yet celibates, male and female, count for less in the life of the nation than families. For these the simple cottage in the country, or two-flat cottage in the suburb, and the blocks of flats in the town centres must be improved to encourage the growth of family life, and secure the greatest measure of domestic privacy, comfort, and health.

At the census of 1901 in England and Wales there were, over fifteen years of age, 8,856,444 persons unmarried, of whom 4,301,578 were men and 4,554,871 were women; 1,796,737 persons widowed, of whom 550,330 were men and 1,246,407 were women; 11,328,918 persons married, of whom 5,611,381 were men and 5,717,537 were women; and 10,545,739 persons under fifteen years of age.

These numbers show that there are 4,851,908 youths and men unmarried or widowed, 5,801,278 maids and women unmarried or widowed, 11,328,918 married men and women, and 10,545,739 children under fifteen years of age. The two last total 21,874,657, or two-thirds of the population, the second something *under* one-sixth, and the first somewhat *over* one-sixth.

These numbers give some idea of the relative proportions of the population to be housed, and although a certain number of widowed men and women have children, that number cannot proportionately be large, and widowed men in many instances confide the care of any child or children to women.

The important points to remember are: That two-thirds of the population are families with children, and that those children are the future nation, and that the national existence depends upon the up-bringing, and particularly the parents and homes, of those children.

Turning to the consideration of some particular classes of buildings and parts of buildings in which we are more especially interested, the most pressing and important are the dwellings in the centres of our large cities. There is a great contrast between the old houses and the new, and architectural design and arrangement is becoming more and more complicated in the construction of flats. There is no reason why none but perfectly healthy flats should not be constructed, but we have not reached that stage yet.

Flats are not only the type of dwelling now being mostly erected in the centres of our cities, but are even springing up in the outskirts, for you will find a goodly number outside the cab-radius; in fact, it is becoming difficult to get away from the " flat " type of building. They are being constructed to suit all pockets and all classes, and they are of all sizes, from the cottages of two flats superposed, which are being erected in great numbers in the suburbs and country around towns, to the majestic pile of princely town flat residences reminding one of the grand " hotels " of the old French nobility, in which several branches of one family kept up separate establishments on separate floors. But a large proportion of the flats erected are designed to suit the incomes and requirements of the families of the working classes, and of the middle commercial and professional classes.

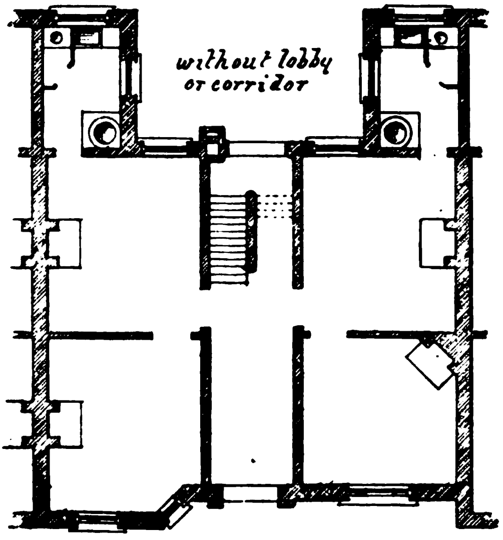
What in England is called a house, is known in Scotland as a tenement; and what we term a flat, the Scotch call a house, and a block of flats an apartment house, no doubt derived from the French term for a flat, " un appartement." An excellent definition, for a flat is distinctly one apartment divided into compartments, to which the French again apply the exceedingly apt definition of " pièces." The rooms and accessories of a flat are truly pieces of one apartment, as the flats are parts of one house.

This form of construction therefore warns us to provide: (1) For the through ventilation, horizontally or vertically, or both, of the common staircase; (2) For the through ventilation or perflation of each flat; and (3) For the aerial disconnection of the sanitary conveniences from the interior of each flat.

Various combinations of domestic and sanitary conveniences are attempted structurally, in order to economize expense in building flats; these combinations specially apply to the water-closets, bath-room, lavatory, scullery, and wash-house. They have already been mentioned, but they become of much greater relative importance in a flat than in an ordinary house. One of these conditions may be again alluded to here.

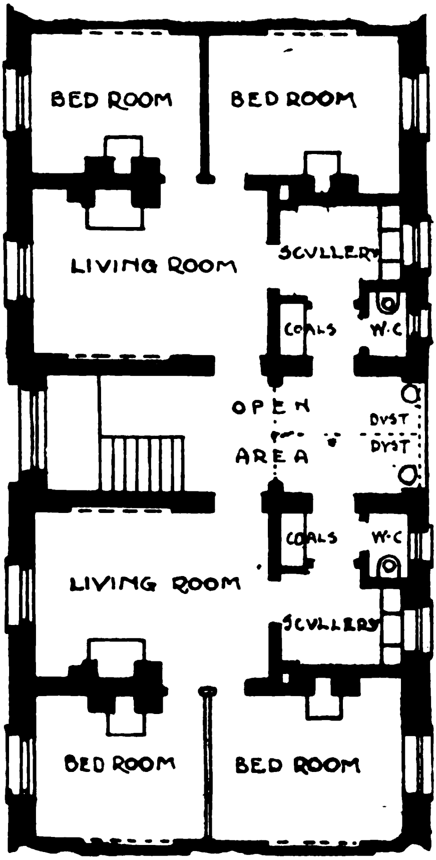
Of all the places that cannot be permanently ventilated from the open air, a bathroom is the most impossible in cold weather. Only robust persons would use in the winter season a bathroom in direct connection with the external air, even if that connection were reduced to the proportion of an air-brick, such as is required in a w.c. It may be safely predicted that any opening into a bathroom will not long remain open. Placing a wholly-enclosed w.c. in a bathroom will not constitute aerial disconnection from a dwelling, unless the bathroom itself is aerially so disconnected by a ventilated lobby or corridor. On the other hand, it is questionable on several general grounds whether a bath should be placed in a w.c., and on one ground in particular, namely, that the construction of the w.c. cannot be maintained in accordance with bye-laws, if it contains a bath and the bath be intended for use.

The staircase-well of an ordinary house is in actual practice, apart from theory, a most important factor in the ventilation of the house and rooms. A flat is deprived of this important reservoir of air, and of vertical ventilation, within the dwelling, and has to rely entirely upon horizontal ventilation, because the most essential economy in the construction of flats is to omit all the staircase-wells but one, which becomes common to all, and to utilize the spaces so obtained as rooms. We have already taken note of the fact that this common staircase ought to be permanently through-ventilated independently of the flats. The next stage in the economy of space is to get as



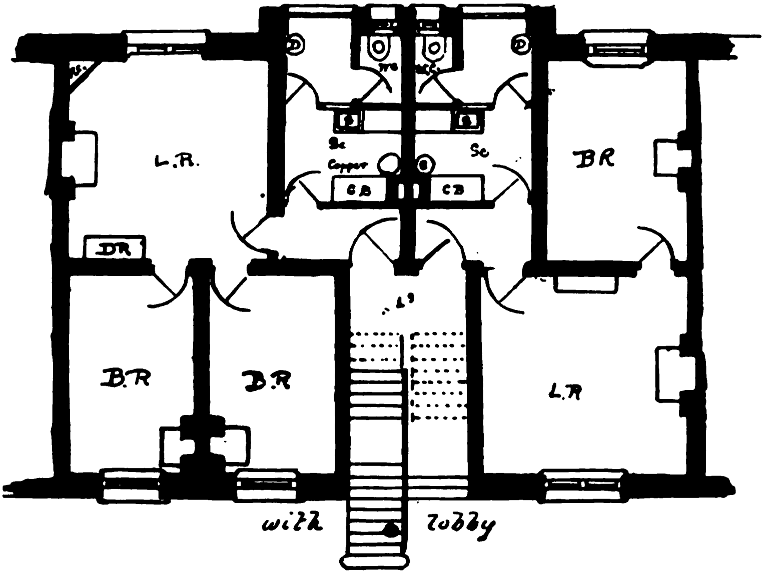
many flats as possible on each floor of the common staircase. Are there any limits to this, and what are the limitations ?

Let us assume that an architect is instructed to design flats with direct access from the common stair, without the intervention of balconies or corridors, lateral or central, and in such a manner that each flat shall be through-ventilated from one front to the front on the opposite side of the building. This would limit the design to two flats on each floor, and it follows that if it is intended to have more than two flats on each floor, corridors or balconies for access must be introduced. The same applies to the number of rooms in a



WITHOUT LOBBY OR CORRIDOR.

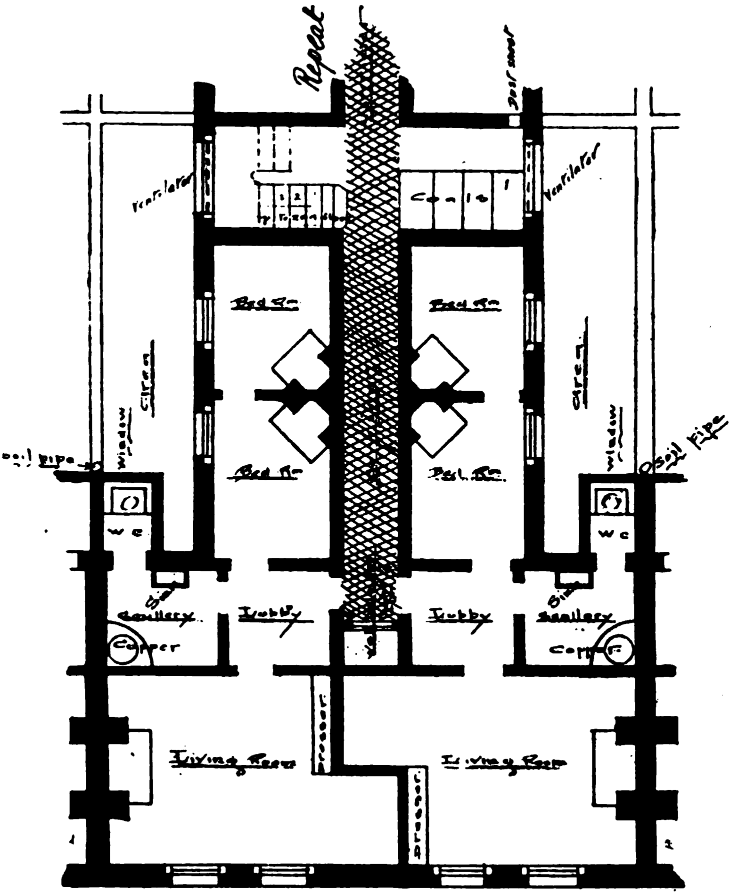
flat; they must either be approached through the other rooms, or from a corridor or a lobby, and a lobby is merely a contracted corridor.



When an ordinary vertically-constructed house is extended vertically, the contained vertical staircase is extended also; when a horizontally-constructed house is extended horizontally, the horizontal corridors are also extended. The extension of the vertical staircase situated against an outer wall is more often beneficial than the reverse, because the light is augmented, and the friction of moving air is not perceptibly increased, and the power of movement is often greatly reinforced. Whereas the extension of a horizontal enclosed and central corridor tends proportionately to increase the friction of moving air and diminish the light.

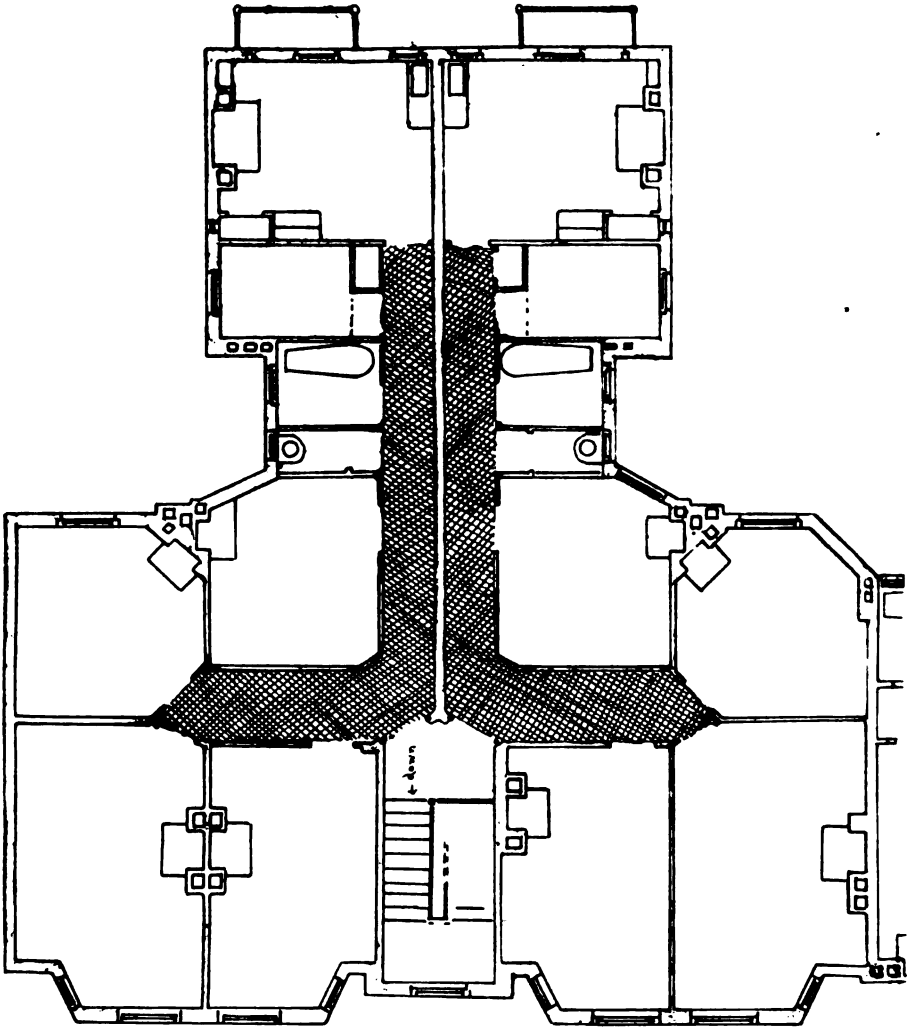
Assuming that an architect is instructed to practice the greatest economy, and design a building with a large number of rooms on each floor, which are not to be approached through each other, he will have to introduce corridors, and it will depend upon whether the flats are small or large, in respect of the number of rooms, where the corridors will be situated; in the former they will be outside, in the latter mainly inside the flat. These corridors inside have rendered Parisian flats notoriously opprobrious. Trélat says they are dark, stuffy, and uncleanly from lack of light to attend to cleanliness, and he might have added, foul from lack of ventilation.

A corridor may be internal or external to a flat, or in a building there may be external corridors to approach the flats and internal corridors for internal communication within the flats. Again, a corridor may be central or lateral; central when it runs between two rows of rooms or along an inner wall; lateral when it runs along an outer wall.

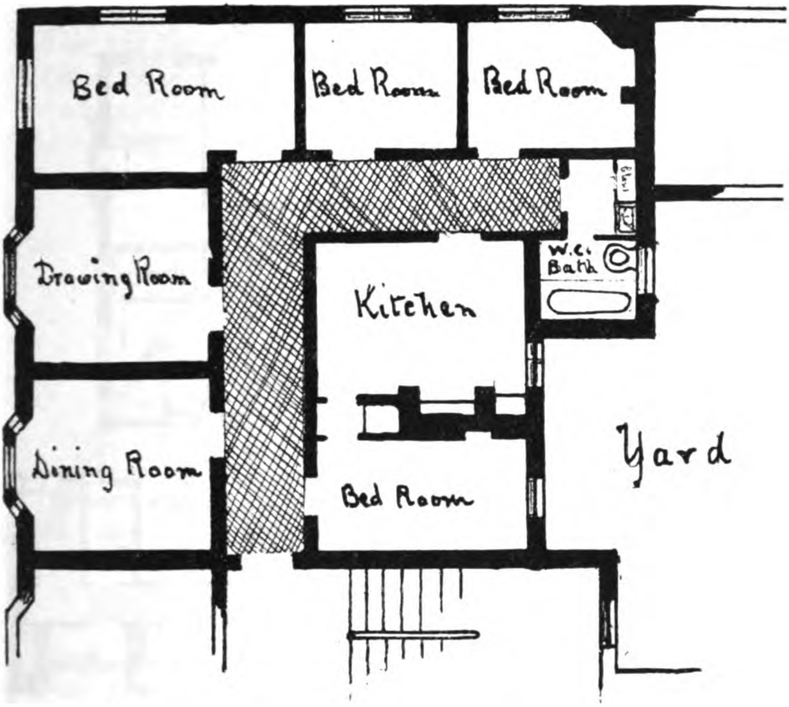


WITH CENTRAL CORRIDOR EXTERNAL TO FLATS.

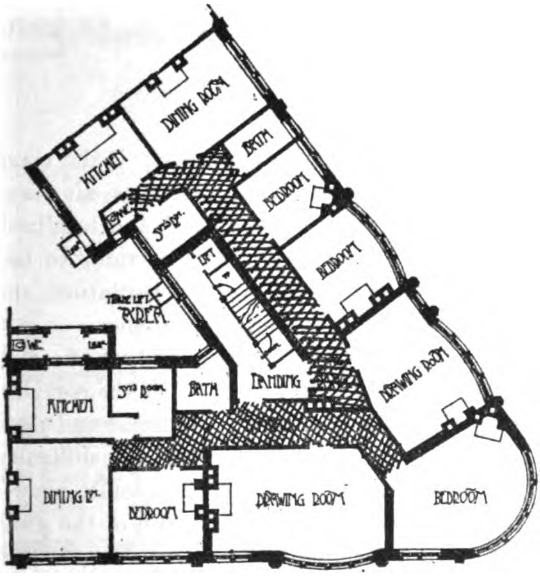
An internal corridor (*i.e.*, internal to a flat), without light and independent ventilation, into which all the rooms and domestic and sanitary offices open, we must regard as being prejudicial to the health of the occupants of a flat. If the corridor is straight, and terminates against an outer wall with a window, the conditions are



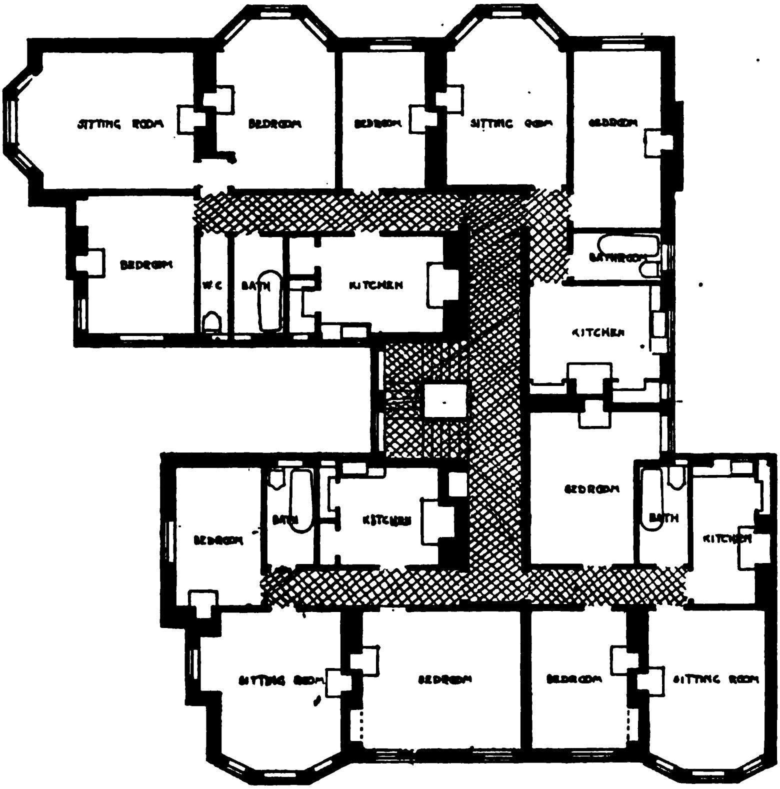
WITH CENTRAL CORRIDOR INTERNAL TO FLATS.



WITH CENTRAL CORRIDOR INTERNAL TO FLAT.



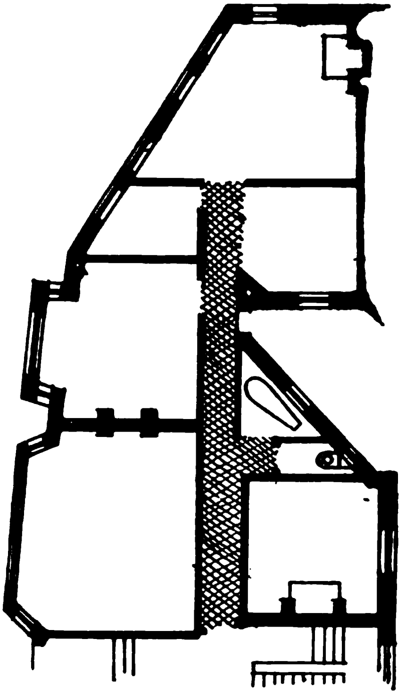
WITH CENTRAL CORRIDORS INTERNAL TO FLATS.



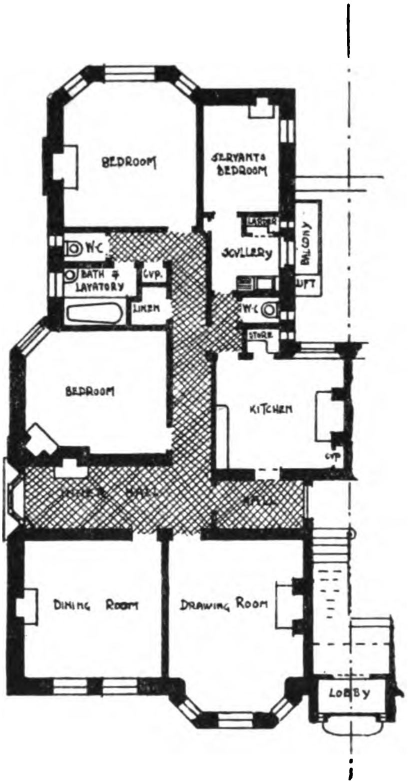
WITH CENTRAL CORRIDORS BOTH EXTERNAL AND INTERNAL TO FLATS.

such that both light and air are obtainable; if the corridor turns at right angles to gain an outer wall and a window, air may be obtained, but the amount of light will be diminished and localized. The most satisfactory condition is for a horizontal corridor to be so arranged as to be capable of through-ventilation or perflation, and sufficiently lighted to distinguish dirtiness from cleanliness.

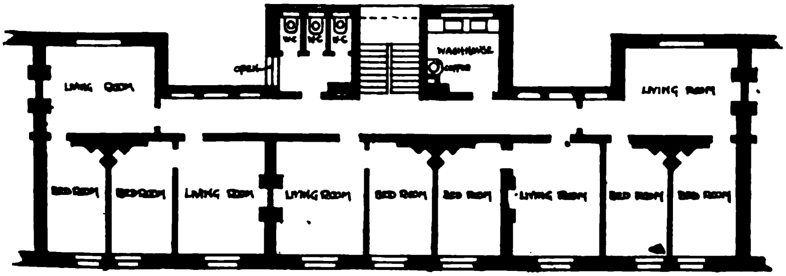
In small flats, where the corridors are outside the flats, the conditions may be worse or better, according to whether the corridors are central between the double row of rooms, or are lateral and against an outer wall of the building. If they are central, the difficulty of lighting and ventilating it is such that, if not overcome, they remain dark *culs-de-sac*, and in addition they cut off some of the dwellings on one face of the building from access to the other face, so that there is no through-ventilation of some of the flats. On the other hand, with a lateral corridor it is possible not only to light and open the corridor to the air, but also to provide windows in the back walls of the rooms of a flat, all of which may be on one face of the building, so as to get direct access to the lighted and aired corridor for through-ventilation of the dwelling.



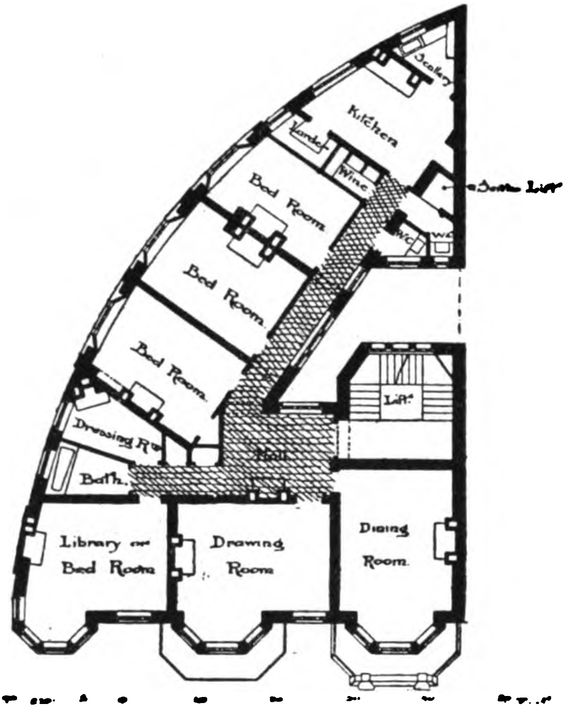
WITH CORRIDOR INTERNAL TO FLAT AND EXTENDED TO OUTER WALL.



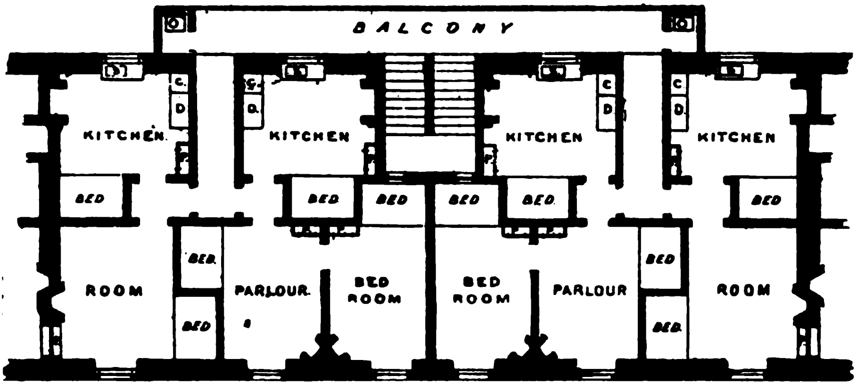
WITH CORRIDOR INTERNAL TO FLAT AND EXTENDED TO OUTER WALL.



WITH LATERAL CORRIDOR EXTERNAL TO FLATS.



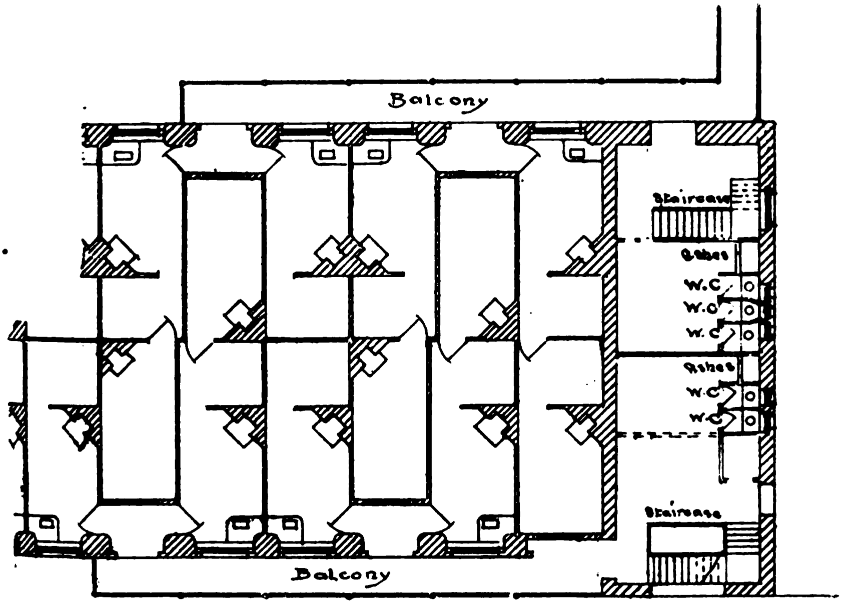
WITH LATERAL CORRIDOR EXTERNAL TO FLAT.



WITH BALCONY.

The question then arises as to what amount of economy of space is effected by substituting lateral corridors for additional staircases. For instance, what is the proportion of space saved in a house with four flats on a floor and one staircase, as compared to two houses, each with a staircase and with two flats on a floor ? This is a problem for architects and social economists, but unless economy of space can be shown and some material advantage proved, we should not prefer the corridor as more conducive to health. One advantage is that a corridor is less expensive than a staircase, and if a corridor is through-ventilated from one front to another, and fairly lighted, it may possibly be made acceptable.

With reference to balconies as a means of access to flats, especially those of the artisan class, these were in vogue in the latter half of the last century, but became discredited for various reasons. Are we coming back again to a balcony system by means of internal lateral corridors against an outer wall so as to form enclosed or partly-enclosed balconies, or, more correctly speaking, galleries or arcades open on one side, like the Italian "loggia" ?



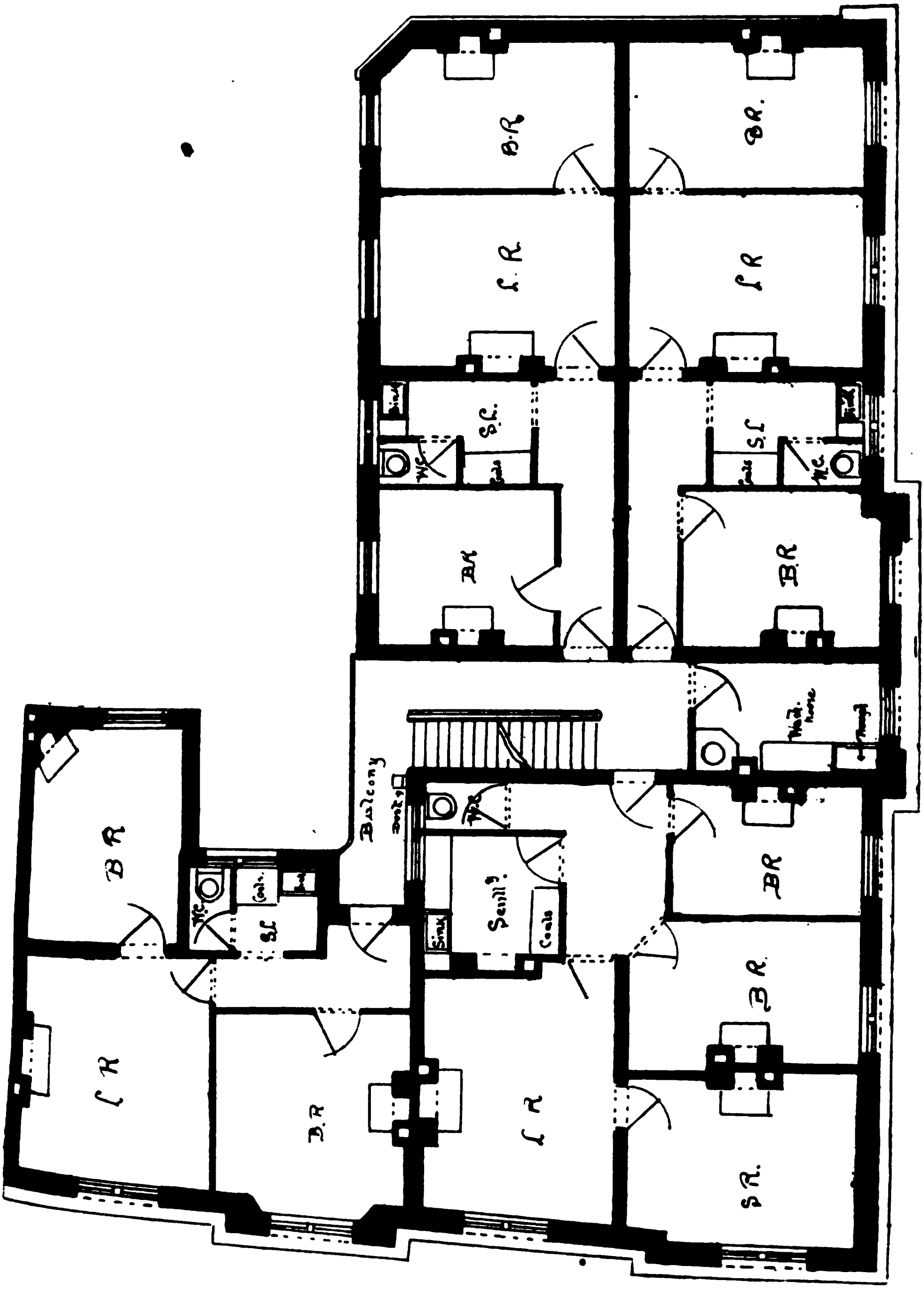
WITH BALCONIES.

The plans shown are intended to illustrate the following conditions of flats according to arrangement:—

1. Without lobby or corridor (2 illustrations).
2. With lobby.
3. With central corridor:—
    (*a*). External to flats.
    (*b*). Internal to flats (3 illustrations).
    (*c*). Both external and internal to flats.
    (*d*). Internal to flat and extended to outer wall (2 illustrations).
4. With lateral corridor:—
    (*a*). External to flats.
    (*b*). Internal to flats.
5. With balcony (2 illustrations).

I am indebted to Mr. Keith Young, F.R.I.B.A., for three of the plans: one showing two three-room dwellings approached from the staircase without lobby or corridor; another showing a two- and a three-room dwelling approached from the staircase by lobbies; and the third showing a "lateral corridor," external to the dwellings, as an approach to a group of one three-room and four two-room dwellings on the same floor. The first is an excellent plan of its class; the last is a cheaper plan made in answer to demand, in which the wash-house, the sinks, and the w.c.'s are used in common. There is a strong feeling amongst both public authorities and private companies to construct cheaply even at the sacrifice of privacy and that home life that has made the British Empire.

Our altered habits appear to be destroying that unique possession and influence amongst the Anglo-Saxon race of the magical word "home," and to be converting its meaning from the home of the family to the home of the race. But the popular pressure is going even further, and the extremest cheapness in construction is being demanded. In rural districts, sparsely populated, where light and air are abundant, this should be attainable with the minimum of building restrictions, and yet without any sacrifice of the privacy of true home life. But in populous cities it is otherwise, and in pressing for extreme cheapness in all directions, there is the danger that the new dwellings that displace the old may ultimately produce worse conditions structurally and socially than those they were intended to improve. It is a very serious question to ask—Are Medical Officers of Health to place their *imprimatur* upon the cheapest of cheap dwellings in our large cities simply because they are cheap? Strict economy we should aim at; but unless we are inclined to be over-persuaded to part with our reputations, and to reap a rich harvest of physical deterioration and sickness in the future, we are in duty

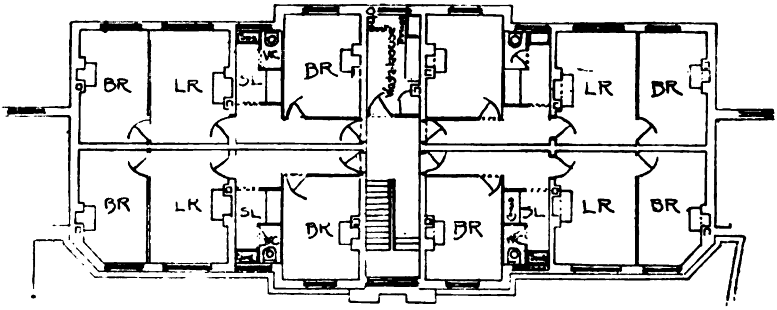

B.R.
B.R.
L.R
L.R
S.C.
S.C.
Sink
Sink
W.C.
W.C.
Coals
Coals
B.R
B.R
Wash. house
Trough
Balcony
Doors
W.C.
Scull'y
Sink
Coals
B.R
S.C.
W.C.
Coals
Sink
B.R
B.R
L.R
B.R
L.R
B.R
S.R.

bound to formulate the limits beyond which cheapness will endanger that future. "Whatsoever a man soweth, that shall he also reap," is as true now as it was nearly two thousand years ago, and applies equally to a man, to a class, to a mass, and to a nation.

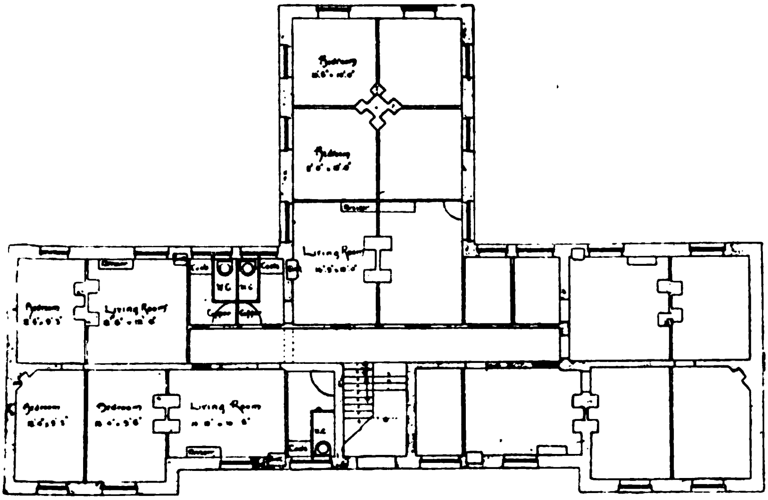
To return from the general, to the particular and to the special aspect, it cannot be too often repeated that on account of the absence of an internal staircase there is no reservoir of air and no vertical ventilation in a flat, but only horizontal; it is therefore supremely important to obtain through-ventilation. As I have on various occasions pointed out, the arrangement of rooms in a small flat may provide horizontal ventilation in three degrees: (1) Perfect through-ventilation; (2) Diagonal ventilation; and (3) Neither, and that in the last arrangement the flats are constructed practically back to back. One of the plans shows the three degrees of ventilation in one building, and the next plan clearly illustrates the great objection to the construction of a central longitudinal wall so that the rooms of a flat all face on one front of a building.

If back-to-back dwelling-houses, the rooms of which are constructed vertically above each other, are universally condemned as unhealthy, how much more are back-to-back dwellings constructed horizontally in flats, to be condemned as unwholesome? Although the former have no horizontal perflation, there is a chance of some vertical ventilation through the stairway and the superposed rooms, but the latter can have neither perflation nor vertical ventilation.

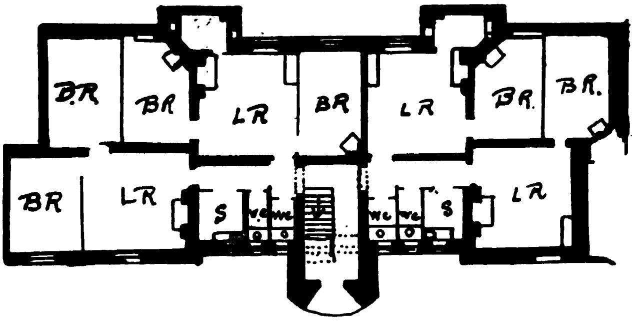
If a pair of back-to-back flats, with windows only on the fronts and a solid wall between the pair, can obtain windows into the open air at one end, and windows into an open staircase or corridor at the



other, the conditions are improved, as seen in the accompanying plan. Without expressing any opinion as to the rest of the arrangement of the design, I am indebted to Mr. W. Nisbet Blair, M.I.C.E., the Borough Engineer and Surveyor of St. Pancras, for this suggestion for obtaining more or less through-ventilation of small back-to-back flats under certain conditions.

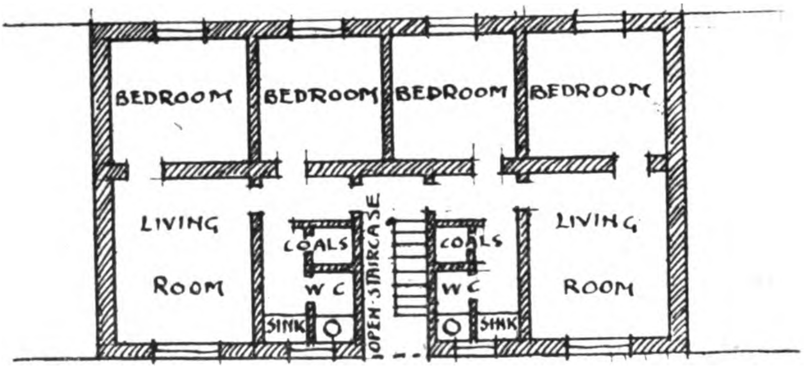


But the back-to-back condition, or absence of perflation, may be produced also by reason of the rooms of a flat being situated all on one front of a building, and without any windows of any kind opening from these rooms on to the other front. This condition is produced when the through-ventilated flats on a floor are separated from each other, so as to leave a space between them for the insertion of other flats, these other flats necessarily having all their rooms on the same front.



It is one of the duties of a Medical Officer of Health to certify as to certain houses used for the purpose of providing separate dwellings when they are so *constructed* as to afford suitable accommodation for each of the families or persons inhabiting them, and that due provision is made for their sanitary requirements, and when the owners desire the dwellings to be assessed separately for the purpose of remission or abatement of inhabited house duty.

It is necessary to explain that by law nearly a hundred years old. a building constructed in flats must be assessed as a whole, and not in parts. But, between 1851 and 1858, a series of some half-dozen appeal cases were heard in the High Court, and it was decided that if a building constructed in flats has a common staircase, always accessible and open to the air at the side, so as to be regarded as an extension of the public way, the flats must be treated as separate houses and assessed separately. The best illustration was the last case in 1858, namely, that of the New Buildings, Lutton Terrace, Flask Walk, Hampstead, and the plan shows a rectangular block with two three-room dwellings on each floor approached by a staircase recessed into the building and open to the air on one side. If the staircase in this building were to be enclosed on the open side by a brick wall with windows, the Surveyor of Taxes would be entitled to assess the whole building in one lump sum, unless the Medical Officer of Health furnishes a certificate that enclosing the staircase is a suitable procedure as regards health and sanitary provision. So long as the common staircase remains open, the Medical Officer's certificate is not required.



It is scarcely necessary to say that, as compared with an open staircase, an enclosed staircase becomes more dangerous to health by reason of the contained air being more stagnant, and being in communication with all the flats or dwellings opening into it; and more dangerous to life by reason of the greater risk in case of fire.

By the Revenue Act of 1903, section 11, this hundred-year-old law is traversed, so that in a house consisting of separate dwellings, each of the dwellings not exceeding £60 in annual value (*i.e.*, the gross rateable value), must be assessed separately. Those whose annual value is from £40 to £60 receive an abatement of one-third of inhabited house duty without the Medical Officer's certificate, but those of £40 and under require the certificate; if granted, two-thirds of the duty is remitted for dwellings whose annual value is from £20 to £40, and the whole is remitted on dwellings of £20 and under.

The certificate of the Medical Officer of Health, according to section 26 (2) of the Customs and Inland Revenue Act of 1890, must apply to the whole house and to the accommodation of each of the families inhabiting it; presumably, therefore, it must also apply to each of the separate dwellings. The Act of 1903 appears to make it necessary that the certificate should apply to each of the separate dwellings, because if there happened to be a dwelling of £40 to £60 in annual value with structurally insufficient or improper accommodation which did not prejudicially affect the rest of the house, and the certificate for the house were not granted on this account, it would follow that the peccant dwelling would have the duty abated to 6d. in the £, and the innocent healthy dwellings would have to pay 9d. in the £ instead of 3d. or nothing, according to annual value.

The requirements in the certificate I have been in the habit of giving are as follows:—

1. That the buildings are in conformity with the Building Acts and Bye-laws, especially as to damp courses, dry areas, concrete basements, etc.
2. That the water supply is in conformity with the bye-laws and regulations.
3. That the drainage is in accordance with the bye-laws and regulations.
4. That the common staircase is permanently ventilated at each floor level or by through-ventilation, so as to break the common air connection.
5. That each dwelling is so arranged as to be through-ventilated from one front to another.
6. That each of the habitable rooms is at least 8 feet 6 inches in height and 96 square feet in area, and has a fireplace and chimney flue.

7. That there is at least one draw-tap and sink, with a constant supply of water thereto, for every twelve occupants or less on each floor.

8. That there is at least one water-closet properly and efficiently supplied with water, for every twelve occupants or less on each floor, disconnected aerially from any dwelling in the interior of the building.

9. That on each floor a sufficient space or open lobby is provided accessible to and for the use of the families on each floor, for the deposit of refuse, etc.

10. That accommodation for clothes-washing is provided sufficient for each family to occupy the wash-house and appliances one day in each week.

These are the minimum requirements for the lowest standard admissible; any provisions made in advance of these are covered by these minima.

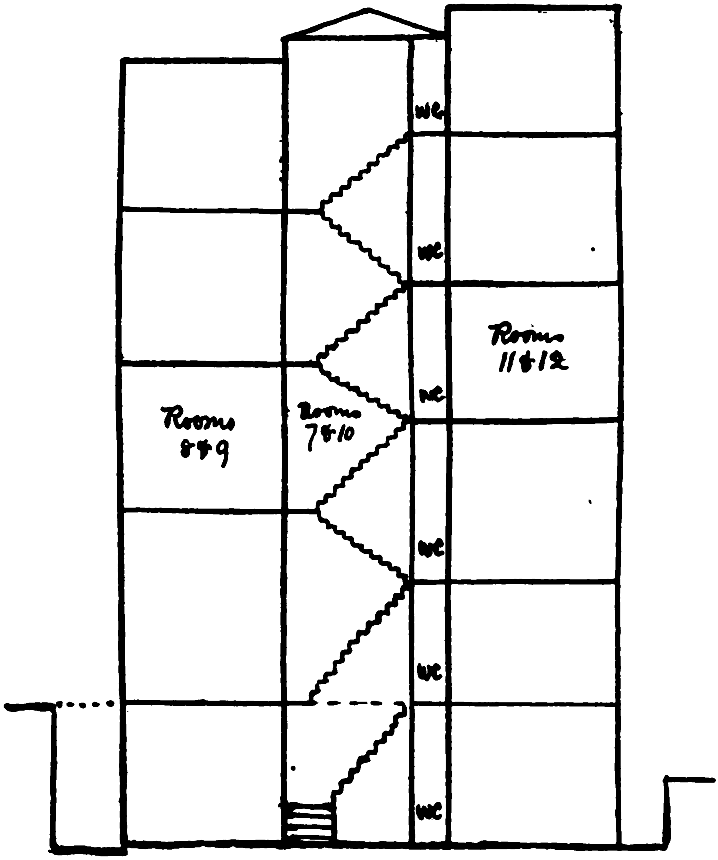
To these should be added, "That a proper place for the storage of food is provided, ventilated into the open air, and protected from the access of flies"; and also, "That corridors within the building, whether external or internal to the dwellings, are all sufficiently lighted and ventilated."

It would appear that the certificate applies not only to the building generally, but also to each separate dwelling within the building, approaching to the position of making the dwelling the unit of sanitary legislation and administration; a very desirable position to attain to, and for which there exists a precedent in the case of underground dwellings.

Here attention must be called to the false position in which a Medical Officer of Health is placed. He is required to certify to a building and dwellings after they have been erected and completed, and the plans of which he has never seen. A more typical case of putting the cart before the horse cannot be conceived. Before the construction or adaptation of houses intended to be let in separate dwellings, notice should be given to the Medical Officer of Health, in order that he may see the plans and have the opportunity of calling the attention of the owner to points to which he would take exception on the grounds of health, and of agreeing with the owner the principles on which he would grant his certificate, so that there may be no misunderstanding afterwards. The main point is to secure agreement with the owner, architect, and builder before a building is erected, and not to harass them afterwards. Furthermore, my experience is that the suggestions of the Medical Officer of Health often lead to improved conditions with economical results in building. In any case a Medical Officer would be well advised to make or have made a sketch plan of one floor, if all floors are alike, and of such floors or parts as are different, as a permanent record of *what* he has certified to. Otherwise there is nothing to prevent alterations being made, and the Officer being called to account for certifying to insanitary conditions, or from subsequently being required to report against conditions, which he will be held to have certified as healthy, unless he can prove the contrary. The proper course, undoubtedly, would be for the Medical Officer to be supplied with the limited amount of plans mentioned, before the erection of the building and dwellings, in order that the houses to which his certificates refer may be placed upon record in a proper manner. At present the law does not provide for this, and I feel it my duty to protest against the unfair position in which we are at present placed in this particular respect in guarding the public health in the pregnant future.

It is not necessary, nor have I time, to enter into the faults of dwellings in sub-let tenement houses, but I cannot refrain from saying that, in my opinion, the fault of the bye-laws regulating these houses is that they fail to control the constructive arrangement and fitting of the dwellings they contain, and that much of the difficulty in dealing with them lies in this fact. A thorough amendment of both the law and the bye-laws in regard to these dwellings is required on the basis of the dwelling, and not the house, as the sanitary unit. Until such is the case, the housing of the poor will remain something less than unsatisfactory. The legislature has set a precedent for the dwelling as the unit of sanitary control in the case of underground dwellings, a class of dwellings that, except in rare instances, is found only in sub-let tenement houses.

We do not sufficiently differentiate between construction, constructive arrangement, fitting, usage, and management. At the Conference of London Municipal Authorities held in July last it was resolved that in cases where there is a constant water supply, cisterns should only be used in connection with hot-water services and sanitary conveniences, and also that a draw-off tap from the rising main, and a sink, should be provided on every floor of a tenement house. These are steps in the direction of regulating fittings, and the latter is of special importance as illustrating the direction in which tenement houses may be improved. But more is wanted, stimulated by some encouragement to owners of tenement property, many of whom, who try to fulfil their trust, and are not hard-hearted or grasping, find that conscientiously maintaining and keeping in repair this class of house becomes a heavy burden with little profit. Time and space will not permit of a consideration of the amendments desirable in the law and bye-laws as to tenement houses, but it may be hoped that this Society will seriously consider the framing of new and


WC
WC
Rooms 11&12
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Rooms 8&9
Rooms 7&10
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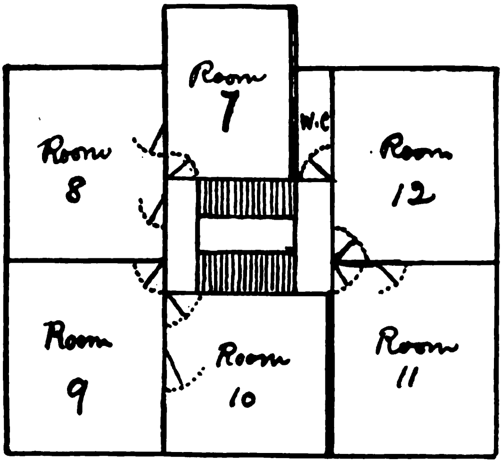

Room 7
W.C
Room 8
Room 12
Room 9
Room 10
Room 11

improved provisions for meeting the deteriorating circumstances as we find them at the present day.

As a passing contribution, I would suggest the provision of permanent openings from the outer air into the staircase, so as to break the communication of air from one dwelling to another, and to form a reservoir of fresh air in the staircase-well, the mid-winter air being tempered by contact with the inner walls; and also the provision of permanent openings from the staircase-well into the rooms, so as to supply air to the fireplaces, prevent the chimneys smoking, permit of the doors being closed and yet ventilate the rooms, the openings being so made as to avoid destroying privacy.

There are other points, but the essential requirement is that houses not constructed to be let in flats, when so let should be properly altered and adapted for the purpose. The plan and section shown illustrate the ingenuity exercised to construct a house so that it may be occupied in dwellings of from one to two, four, or six rooms according to demand: an elastic house capable of chameleon changes.

It is mainly in tenement houses that we find underground dwellings. It is assumed by the Public Health Act that an underground room, if conforming to certain structural requirements, is sufficiently fit to be occupied for sleeping purposes. Without expressing any opinion as to the degree of healthiness, underground rooms may be divided into legally "fit" and "unfit," according to whether they do or do not conform to these structural requirements.

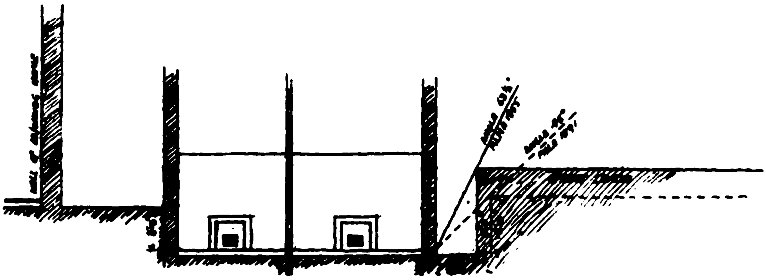
If a room is "unfit" and let together with a room that is not underground, it may be slept in with legal impunity.

A room is not in law technically underground until the floor is more than 3 feet (4 feet elsewhere than in London) below the surface of the street or of the ground adjoining.

So that an "unfit" wholly-underground room may be let with another partly-underground room (technically not underground), and both may be used for sleeping purposes.

These partly-underground rooms altogether escape the provisions of the law. Against the external wall of such a room the ground may directly abut without any protection at any height less than 3 feet, and the floor may be laid directly on the soil. The constant heat and draught of a fire may evaporate any apparent dampness, and the air of the room may mask any effluvia. This is a common condition of rooms adjoining back-yards. And sometimes on the further side of a small back-yard, a wall will tower up to obstruct light and air. In the diagram, if the front room were like the back it could be legally occupied for sleeping, either separately or in conjunction with the back room.

In July last the London Boroughs resolved: "That this Conference is of opinion that no underground room not complying with the conditions laid down by section 96 of the Public Health (London) Act, 1891, should be used for sleeping."



The structural requirements constituting a "fit" underground sleeping-room are somewhat complicated, particularly in the manner in which the angle of light and air is obtained. As the room must be at least seven feet high, and the ceiling at least one foot above ground level, then an area six feet wide would give an angle of light and air of 45° measured from the external wall at the level of the floor of the room. This angle of 45° (the height equal to the base) is the angle applied to new working-class dwellings by the London Building Act of 1894, and the angle of 63½° (the height equal to twice the base) is that applied to better-class dwellings. These two angles practically correspond, respectively, to the extreme 6 feet width of the 1891 Public Health (London) Act, and the 3 feet width of the 1855 Metropolis Management Act, but between these again comes the provision of 4 feet in the former Act. As resolved at the Conference last July, some uniform angle might be adopted with advantage to the simplification of the enforcement of the provisions of the Act.

The open area of an underground room is closed at the ends and in front, so that it acts as a downcast shaft for ventilation. In order to secure perflation of the dwelling-room it is provided that the ceiling of the room must be at least one foot above the level of the ground in front of the open area; but it is not provided that the window of the room shall extend up to the ceiling, so that the advantage of fixing a minimum level for the ceiling is often lost by the situation of the window.

It will thus be seen that the law bristles with anomalies in regard to underground sleeping-rooms. We also require:—

1. To protect from invisible dampness and effluvia rooms not technically but partly underground, used for sleeping purposes.

2. To protect rooms, especially back rooms, from being shut out from light and air, or to require them not to be used for sleeping purposes.

3. To obtain a uniform angle of light and air to technical underground dwelling-rooms, and ultimately to all underground rooms used for sleeping.

4. To obtain perflation by the extension of the window up to the ceiling.

Underground work-places are beginning to receive more attention than formerly. The improvement of underground bakehouses must also have revealed to us the necessity for more closely studying architectural construction and arrangement. Many underground bakehouses may be classified in certain distinct types.

A. Those in the basement of houses.

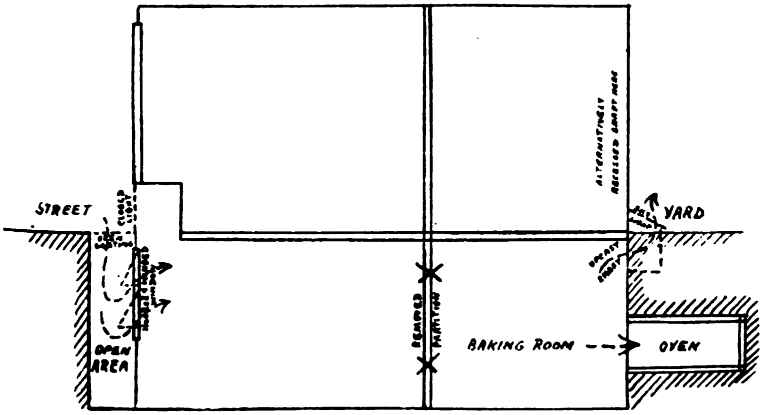
B. Those on the rear space at a level with the basement.

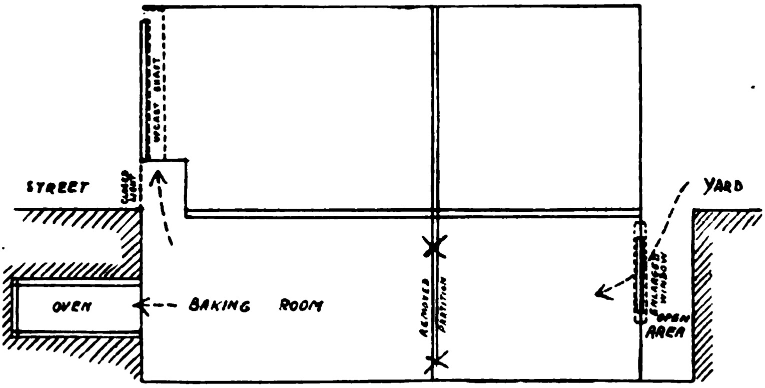
C. Those under the public way.

The difficulties of the last are most difficult to ameliorate.

Those in the basement of houses may have (1) The oven in the front of the house, and an open area at the back or side of the house ; (2) The oven at the back and an open area at the front or side of the house ; and (3) The oven at the front, back, or side and no area.

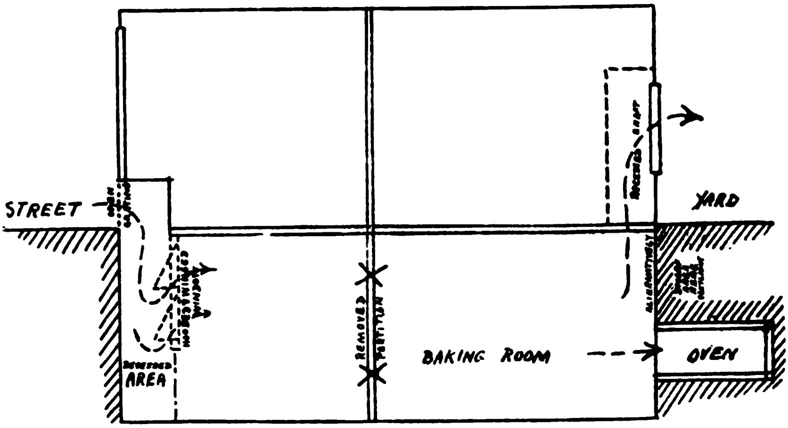
The deficiences of the last may be as difficult to overcome as those in class *C*, under the public way. The presence of an open area on one or other side of the house facilitates greatly the admission of light and air ; covered areas may be opened up where circumstances permit ; recessed areas may sometimes be created with advantage, or if rear space be available a new area may be excavated. Having obtained an open area on one or other side of the basement of the house, a downcast shaft for ventilation is provided. If the open area be on a front or side adjoining the street, the provision of hooded and winged windows will prevent the admission of dust and dirt from the street. The direct admission of air and wind carrying impurities



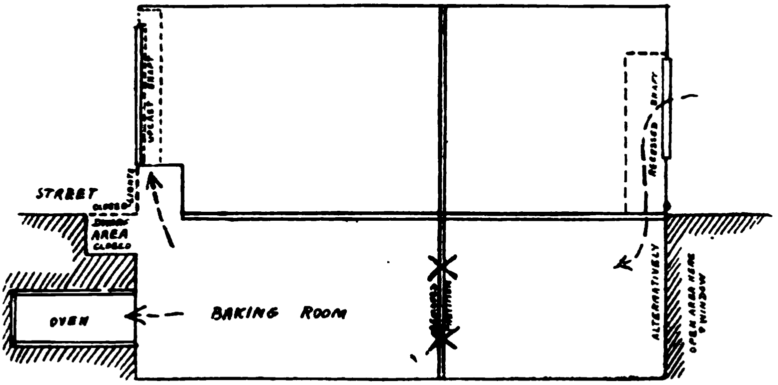


from the street into a baking-room is most objectionable, and for this reason direct ventilation through a stall-board, or through the pavement, or through a dwarf area in front, should not be permitted.

Having obtained an open area to the basement, then by cutting away the partition between the front and back or side room, the whole basement may be thrown open to the access of abundance of air.



There should be sufficient draught through the damper over the outside of the oven to carry away steam and effluvia into the flue; but if there be not sufficient, the stall-board bulkhead in front or side may have a shaft carried up to the facia, or if the oven be at the rear a hinged fanlight may be fixed over. Additional outlets may be made into the flue in use and into any disused flues.



If an open area cannot be obtained outside the main wall, one may be created inside, either by recessing under a high and wide stall-board in front, or by projecting the area upwards at the rear of the backroom on the ground floor, to obtain access to window space.

To obtain light is as a rule a much easier matter. Fixed pavement lights, fixed stall-board lights, and extensions of those existing, are available, as well as borrowed lights in walls and ceilings, and the ultimate saving in the gas bill will often more than repay the cost. Of course baking rooms that have roofs over may be easily and amply lighted and ventilated by skylights.

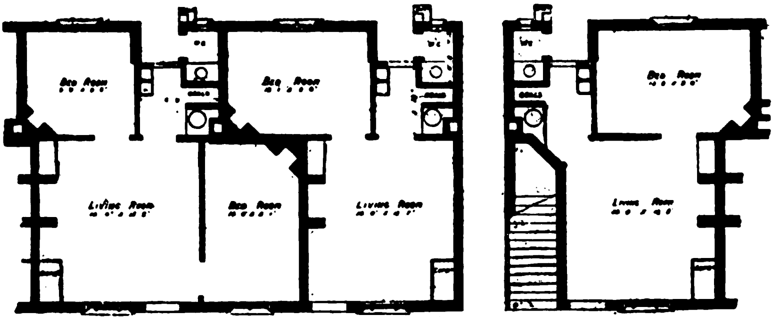
These structural points are of infinitely greater importance than details of decoration or fitting. Although these details should be attended to in order to obtain the best results, they should not be the first consideration. The best efforts should first be spent in obtaining improved structural conditions, because they are permanent. Sometimes it may be found that a door from a baking room for access to an open area is temporarily used as a means of ventilation. This is not the intended use of the door, but it is difficult to prevent it being so used after a certificate has been granted, except by means of bye-laws for the management of the premises and conduct of the business. It could then be provided that if such a door be used for ventilation purposes it should be properly protected, and so constructed that the lower half should be always kept closed to exclude the dust and dirt of the open area, and the upper half should have protection above against the entrance of dust and dirt from the street, or be treated as a window similarly situated.

The underground kitchens of places supplying food will no doubt have to follow on similar lines as underground bakehouses, with a view to protecting the food as well as the workers.

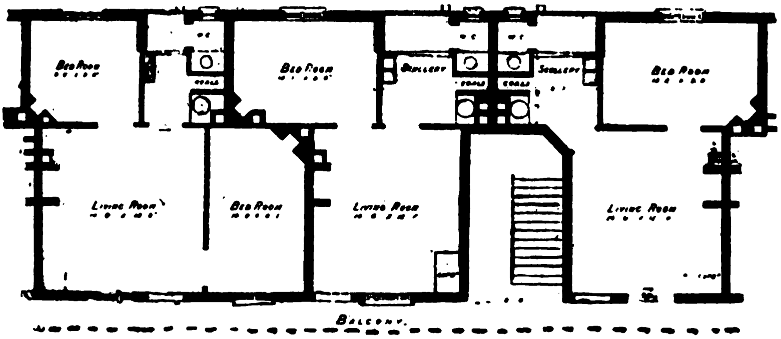
Eventually there will no doubt be powers for regulating the structure of all premises where food is prepared for sale, whether below or above ground, and for the conduct of the business, in accordance with the resolution of the Conference of July last, when the London County Council was asked to insert such powers in their next Bill.

Some work-rooms, laundries, and other work-places will be subject also to certain minimum requirements structurally, but the structural conditions there in most instances are better.

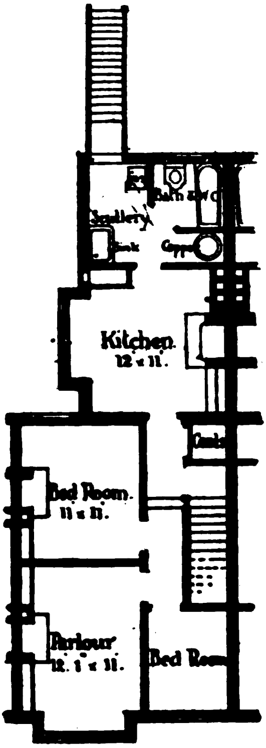
To encourage the withdrawal of population from the centre of large cities to the periphery for dwelling purposes, transport, like buildings, will require stratification and zonification. Be the terms good or bad, they define exactly the necessities of the case, embracing omnibuses, tramways, shallow tunnels, deep tubes, and over-head railways, of which we have many in London, and their extension and multiplication proceeds apace. As soon as we get away from the crowded city the problems connected with buildings become simpler and more readily solved. The flat still pursues us to the suburbs; many municipalities have erected two-flat cottages on the outskirts of their



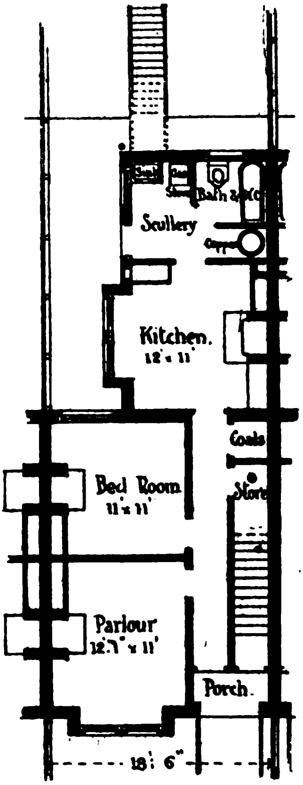
GROUND FLOOR.



UPPER FLOOR.



FIRST FLOOR PLAN.



GROUND FLOOR PLAN.

areas. With any drawbacks they may have, they are infinitely better adapted to the requirements of the population than the type of houses erected by many builders in suburbs. With a view to getting the best kind of tenants one sees houses of eight, ten, or more rooms erected and arranged for housing single families; and as the single families do not come along and occupy them, they are sublet to two or more families. Becoming more and more sublet without any adaptation to altered requirements, they at the same time become more and more insanitary, accompanied by a loss of privacy that utterly demoralises the population that enters them. This is one of the haphazard ways in which our suburbs arise, grow, and in parts become demoralised and deteriorate.

It is a pleasure to see in the Report made by Drs. Ashby and Woodforde the efforts made by the Home Counties Branch to induce this Society to improve the new Model Building Bye-laws of the Local

Government Board for Rural Districts. The subject is full of difficulties. For instance, in mining districts the closure of mines has in some cases rendered much house property valueless, so that private persons have fought shy of building. Again, the increased expense of building has diminished the inducement to construct houses in country places. If some materials and methods of building can be devised by which sufficiently healthy requirements may be obtained at small cost for small tenants in rural districts, and a term can be placed upon the duration of such buildings requiring them to be reconstructed or thoroughly overhauled at the end of a certain period, the capitalist would then know where he stood, and be prepared to sink money, calculated on a reasonable return on his capital. But at present he fights shy, and at the same time opposes the public authority that attempts to step into the gap; and between Scylla and Charybdis the countryman suffers and is driven into the town. Let us therefore devote ourselves also to studying how cheap and ready, and yet reasonably healthy, dwellings of limited durability may be erected in the country, and what bye-laws are desirable—not for preventing, but for encouraging their construction.

The amount of regulation that buildings and dwellings require increases with their proximity to each other, directly with the density of the buildings upon the square space, and with the density of the dwellings within the cubic space. It diminishes with the diminishing density of dwellings in their houses, and of houses upon the land, until a point is reached at which, as in the open country of the Colonies and America, there is no regulation at all. Many thousands of our fellow-subjects and kindred live healthy and robust lives in the simplest of dwellings, in the bush and upon the prairie.

In the open country, where plenty of light and air are obtainable, the exclusion of cold, wet, dampness, and ground air, and the protection against fire, harbouring of vermin, and transmission of sound, are the essential features. It would almost seem, that just as in towns buildings demand regulation according to zones and classes, such as domestic, public, and warehouse class, so in the open country is required in addition to the ordinary domestic house, a "summer" house class. We appear to have forgotten that our pastoral ancestors, both prince and peasant had their summer and their winter houses.

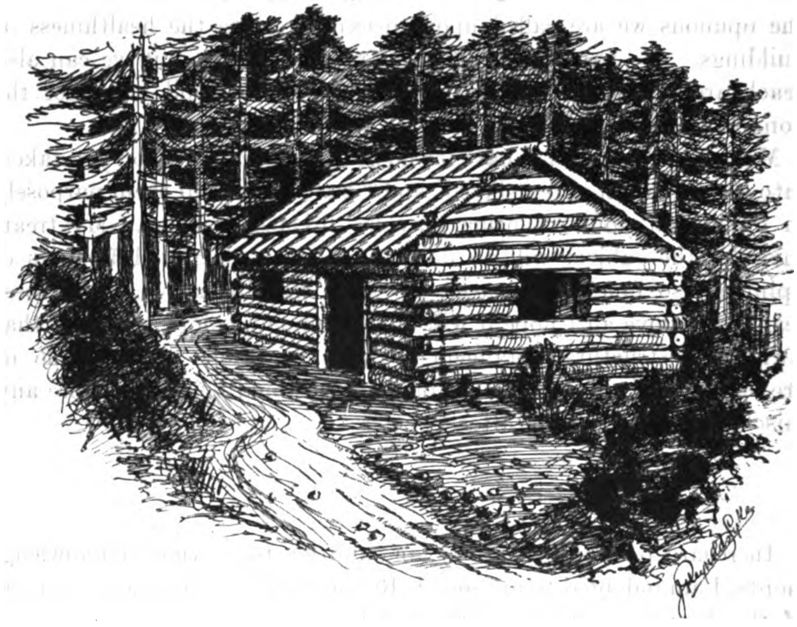
A house for continuous and permanent occupation all the year round should not be provided with less than the essential features necessary for health, safety, and comfort; and regulations to secure these are necessary, although it is open to question whether some building regulations do not demand structural elaboration far beyond the necessity of the case. On the other hand, a dwelling intended for summer season enjoyment should surely be exempt from elaborate building rules, and the pent-up townsman should be enabled even in a log cabin to obtain recuperation of body and mind.

In conclusion, permit me to remind you that the house is the *fons et origo* of tuberculosis, and of many other ills that the flesh is heir to, and that it plays its part in physical deterioration. Architecture influences not only the physical, but also the moral and social life of a people, and we cannot neglect to take account of these other influences. It would be absurd to expect Medical Officers of Health to be expert architects, but from the many details bearing upon health to which I have called your attention, you will see that there is much matter with which we ought to be familiar, in order to properly form the opinions we are called upon to express as to the healthiness of buildings. We have much to learn from architects, but we can also teach architects much, and the two processes should make for the common good of the public health.

Many of the points I have brought before you are not yet taken into consideration in text-books, and I have unearthed them purposely in order that your attention may be directed to them. My treatment of the subject will no doubt give rise to many differences of opinion; so much the better, we shall thereby arrive at the best results. Above all I hope it will impress upon us more and more that permanent structural arrangements and conditions are supreme in preventive sanitation, and that our voices should be heard before any mischief is done and not after.

In regard to the illustrations, in addition to previous acknowledgments, I am indebted to my son, J. Reynolds Sykes, for a large number of the drawings. A few of the rougher diagrammatic plans are my own work, and this may account for their inferiority, but if they illustrate the points intended they also serve their purpose. In preparing and arranging the illustrations for printing, I am greatly indebted to Mr. Lawton for his advice and assistance. I have specially to thank M. Emil Levy, the Director of the Central Library of the Beaux-Arts in Paris, for his kindness in authorising me to reproduce some of the plates of the late M. Charles Garnier of the houses of the historical period erected at the Paris Exhibition of 1899, taken from the beautiful work published by him, entitled, *l'Histoire de l'Habitation Humaine*; and also M. Auguste Choisy, Chief Engineer of the Ponts et Chaussées of France, for his good offices in furthering my request at headquarters in Paris.

As a last word I would add, that I have endeavoured to lift the relationship of public health to architecture, out of the narrow channel of pipes and tubes to a higher level, with a wider survey of the influences exercised by constructive art upon national health. I am conscious of my shortcomings in attempting to deal with such an extensive subject in so brief a space as that afforded by a Presidential address; but if I have only succeeded in inducing you to direct more attention to the good and bad points in planning and construction, and to take a greater interest in Architecture as one of the powerful means of improving the Public Health, my task is accomplished.



PROCEEDINGS OF THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTITUTED, 1881. INCORPORATED, 1891.

A General Meeting of the Incorporated Society of Medical Officers of Health was held at No. 9, Adelphi Terrace, Strand, London, W.C., on Friday, 11th November, 1904. Present: Drs. J. F. J. Sykes, President (in the chair), E. Seaton, W. N. Barlow, F. G. Crookshank, James Kerr, J. Priestley, D. S. Davies, Meredith Young, M. K. Robinson, T. Wright Mason, Harold Coates, John Meredith, J. W. Hembrough, A. M. Davies, Edward Walford, T. H. C. Stevenson, Musgrave Craven, H. E. Armstrong. F. J. Allan, H. Beale Collins, P. Caldwell Smith, H. Meredith Richards, Wm. Berry, Reginald Dudfield, R. A. Dunn, John Tubb-Thomas, Oliver Field, H. W. G. Macleod, E. F. Willoughby, A. W. J. MacFadden, J. Groves, J. Howard Jones, W. A. Bond, Prof. Kenwood, Hugh Woods, W. A. Evans, G. F. McCleary, Herbert Jones, A. Newsholme, (Members); Sir Henry Craik, Sir Patrick Manson, Dr. G. A. Heron, Miss Ravenhill, (Visitors).

THE PRESIDENT, before proceeding to the ordinary business of the meeting, referred in graceful terms to the honour of Knighthood which had been conferred upon Sir Shirley Murphy, and proposed the following resolution, which was seconded by Dr. Edward Seaton and carried with acclamation: "That the Society desires to record its great gratification at the distinction which has been conferred by His Majesty the King upon Sir Shirley Murphy, a past President and a former Hon. Secretary of the Society."

Minutes.—The minutes of the previous General Meeting held on April 8th having been printed and published in *Public Health*, were taken as read, approved, and duly signed by the Chairman.

CORRESPONDENCE.

Conference on School Hygiene.—Read a letter from the Royal Sanitary Institute relating to a Conference on School Hygiene, and an Exhibition to be held in London in February, 1905, and inviting the Society to send three delegates.

After discussion, on the motion of Dr. E. Seaton, seconded by Dr. R. Dudfield, it was agreed unanimously that the following be appointed delegates: The President, Dr. Arthur Newsholme, and Dr. H. Meredith Richards.

REPORT OF COUNCIL.

Your Council report:—

1. That they have heard with much pleasure that the King has been pleased to confer the honour of knighthood upon Mr. Shirley Murphy, the Medical Officer of Health for the County of London.

2. That they have received a letter from the Royal Institute of Public Health asking the Society of M.O.H. to co-operate with them, and to nominate in connection therewith two representatives to serve on the General Committee formed to arrange for the next Congress of the Institute to be held in London in July, 1905; but that they have decided to take no action in connection therewith.

3. That they have appointed the following Fellows to serve on the following committees :—

(*a*). *Finance and Journal Committee.*—J. Groves, R Dudfield, A. Bostock Hill, J. R. Kaye, H. W. Roberts, J. Wheatley, J. Spottiswoode Cameron, J. Howard-Jones, J. W. Hembrough, H. Cooper-Pattin, Sidney Davies, together with the President, Treasurer, Editor, and the two Hon. Secs. *ex-officio.*

(*b*). *Parliamentary Committee.*—Sir Shirley Murphy, J. Spottiswoode Cameron, A. Newsholme, W. T. G. Woodforde, J. C. McVail, J. Groves, T. W. H. Garstang, J. Mitchell Wilson, Louis Parkes, H. Meredith Richards, R. Dudfield, together with the President, Treasurer, Editor, and the two Hon. Secs. *ex-officio.*

(*c*). *Library Committee.*—R. Dudfield, J. Mitchell Wilson, A. Newsholme, A. Bostock Hill, together with the President, Treasurer, Editor, Hon. Librarian, and the two Hon. Secs. *ex-officio.*

4. That they have approved of the action of the Special Committee *re* Return Cases of Scarlet Fever and Diphtheria in having drawn up a schedule of enquiries to be distributed gratuitously amongst the members of the Society, Medical Officers of Health and Medical Superintendents of Isolation Hospitals asking them to make use of the schedules in connection with their statistics, and for that purpose have instructed the Hon. Secretaries to obtain 5,000 copies of the schedule ; and that they have now discharged the special committee.

5. That they are still considering the new Public Health (Fixity of Tenure) Bill at present before a Committee of the British Medical Association, Dr. Herbert Jones (one of the Hon. Secretaries, being a member of the Public Health Committee of the Association) reporting from time to time.

6. That they are still considering the proposed Byelaws *re* New Streets and Buildings in Rural Districts, and have referred the matter to a special committee consisting of Drs. Reid, Wheatley, Kaye, Woodforde Ashby, Eustace Hill, Groves (with power to add to their number), with instructions to the committee to report to the Council at the meeting to be held in April, 1905, the type in which the Byelaws (as amended by the Home Counties Branch) are set, to be kept up meanwhile.

7. That they have referred to the Parliamentary Committee the subject of suggested alterations in any or all of the Articles of Association, and have given instructions to the Committee to refer the matter to the Branches for their opinions before reporting, the Hon. Sec. meanwhile to take the opinion of the Hon. Solicitors as to who are eligible to become Fellows, Members and Associates of the Society under the existing wording of the Articles of Association.

8. That they have decided to hold the January, 1905, meeting of the Society (and Council) on the 1st Friday (January 6th), instead of the 2nd Friday (January 13th).

9. That they have given instructions to the Hon. Secs. to draw the attention of the Registrar-General to the fact that, in the Forms used by Coroners in certifying deaths in connection with which there appears to be no need for inquests being held, there is now no mention made of the probable causes of death, and to request him to cause to be added a column in which such probable causes of death may be noted.

Dr. E. Seaton moved and Dr. Hembrough seconded that the Report of Council be received and adopted, and it was agreed unanimously.

ELECTIONS.

The following gentlemen were duly nominated and ballotted for, and the PRESIDENT declared them to be unanimously elected:

AS FELLOWS:

Blamey, James, M R.C.S., L.S.A., Penrhyn, Cornwall, M.O.H Penrhyn U.D. and Kerrier U.D.

Burton, S. Herbert, M.B., F.R.C.S , 50, St. Giles Street, Norwich, M.O.H, Henstead U.D.

Hayden, Thomas H., B.A., M.B., B.C., Marlborough, Wilts, M.O.H. Borough of Marlborough.

Horrrocks, W. H., M.B. F.R.C.S., Gibraltar, M.O.H. Gibraltar.

Morgan, Edward Rice, M.R.C.S., L.S.A.. Morriston, Swansea, M.O.H. Swansea R.D.

Thornton, Bertram, L.R.C.P., M.R.C.S., Berkeley Lodge, Trinity Square, Margate, M.O.H. Borough of Margate.

Young, Thomas Brett, M.D. L.R.C.P., M.R.C.S., The Laurels, Halesowen. M.O.H. Halesowen R.D.

AS MEMBERS:

Birt, Cecil, L.R.C.P., M.R.C.S., Lt-Col. R.A.M.C. The General Hospital, Pretoria.

Porter, Robert, M.B., C.M., Lt-Col., R.A.M.C. The General Hospital, Pretoria.

AS AN ASSOCIATE:

Kent, A. F. Stanley, M.A., F.G.S., F.L.S.. Clinical and Bacteriological Research Laboratory, University College, Bristol.

Several gentlemen were nominated as Fellows and Members of the Society.

A paper was read by Dr. G. A. Heron, F.R.C.P., D.P.H., entitled "Instruction in Hygiene in Universities and Schools—a Proposal."* In the discussion which followed there took part: Sir Henry Craik, Miss Ravenhill, Dr. A. Newsholme, Sir Patrick Manson, Dr. J. Kerr, Dr. H. E. Armstrong, Dr. Herbert McCleod, Dr. E. Walford, Dr. H. Meredith Richards, Professor Henry Kenwood, Dr. Musgrave Craven, Dr. F. J. Allan, Col. A. M. Davies, D.P.H., Dr. John Meredith, and the President. Dr. Heron replied.

Dr. Heron then read a paper* on "Instruction in Hygiene in Universities and Schools—a Proposal."

Dr. A. Newsholme proposed the following resolution, which was seconded by Dr. W. Arnold Evans and carried unanimously: "That the Council be asked to form a committee consisting of members of the Society, together with Sir Patrick Manson, Miss Ravenhill, and Dr. G. A. Heron, to consider how best the teaching of hygiene in schools and the teaching of hygiene to teachers can be promoted."

Dr. E. Seaton proposed a hearty vote of thanks to Dr. Heron for his very valuable paper. Dr. Hy. Armstrong seconded, and the resolution was carried unanimously.

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* The paper and discussion will appear in the January issue.

Metropolitan Branch.—A Meeting of the Metropolitan Branch was held at 9, Adelphi Terrace, on Friday, Oct. 28th, 1904. Present: Drs. H. W. Roberts (President), T. O. Dudfield, Bond, Brown, Allan, Sidney Davies, Sykes, Caldwell Smith, Annis, Wanklyn, Bryett, Field, and Priestley (Hon. Sec.)

Annual Dinner.—It was resolved to hold the Annual Dinner of the Branch on Friday, Jan. 27th, 1905, and to invite ladies. Tickets 7s. 6d. each (without wine). [It has since been arranged to entertain, as the guests of the evening, Sir Shirley and Lady Murphy.]

Shop Hours' Act, 1904.—After discussion, it was decided that the Hon. Sec. should write to the L. G. B., asking if the duties under the Shop Hours' Act, 1904, would fall within those laid down in the Board's Sanitary Officers' Orders. It was also *resolved* that, in the opinion of the Branch, when the Act is put into force, any officers appointed thereunder should belong to the Public Health Departments of the Sanitary Authorities concerned, and that the Society might, with advantage, be asked to express an opinion on this subject.

L.C.C. General Powers Bill, 1905.—The Branch approved of powers being obtained for Sanitary Authorities of the Metropolis:—

(*a*) To require owners to make reasonable provision for the supply of water to the tenants of each floor in tenement houses.

(*b*) To enable Sanitary Authorities to undertake, if they think fit, the collection of offensive trade refuse, and to empower them to require payment of a reasonable sum by the owner, or occupier, of any premises from which such refuse is removed.

It was decided to hold over the further discussion of the other provisions of the Bill until after it had been drafted.

L. G. B. Bye-laws for New Streets and Buildings in Rural Districts.—A further discussion took place on this subject, and the Branch confirmed their former decision, *viz.*, "to take no action in the matter."

Revenue Act, 1904, *Sect. ii.*—A short paper was read by Dr. Sykes, M.O.H., St. Pancras, giving a history of the Revenue Acts as far as M.O.H. were concerned, and suggesting the desirability of uniformity of action throughout London (and elsewhere) in regard thereto.

After discussion, the matter was referred to the Council, with instructions to bring up a list of suggested requirements for the approval of the Branch.

The meeting then adjourned.

Yorkshire Branch.—The Autumn Meeting of the Branch was held in the Town Hall, Rotherham, on Friday the 28th October, 1904. There were present: Drs. Anderson (Wortley), Arbuckle (Thorne), Burman (Wath-on-Dearne), English (Swinton), Hargreaves (Wetherby), Hunter (Pudsey), Housley (Retford), Johnstone (Ilkley), Millar (Wombwell), Muschamp (Yeadon), McLean (Doncaster R.), Picken (Rawmarsh), Riddell (Rotherham), Robinson (Rotherham), Scatterty (Keighley), Scurfield (Sheffield), Smith (York), Mitchell Wilson (Beverley), and J. R. Kaye (Hon. Sec., Wakefield).

The Members were welcomed by the Mayor (Mr. Councillor Clark), who remarked that although they had nothing beautiful to show them still they had much that was useful. The Corporation, he said, had caught up the modern spirit of progress, and he referred to the sewage works and the isolation hospital now in course of erection, and ended by saying that health is very much cheaper than disease.

Dr. Robinson, the retiring President, thanked the Mayor for his welcome and then introduced the new President, Dr. W. Scatterty, of Keighley, who proceeded to deliver an interesting address on Hospital Isolation. In dealing with the prevalence of scarlet fever, he denounced the idea that it was due to isolation hospitals, and said that if any fault was to be found with these institutions it arose from overcrowding and maladministration. He had no hesitation in saying that the mortality from Scarlet fever was much lower in hospitals than in home-treated cases. The paper was full of points of interest, and the discussion was postponed for the reading of a similar paper at the next meeting.

Dr. Riddell, the Assistant M.O.H. for Rotherham, read a paper on "Hereditary Immunity to Vaccinia and Variola." He illustrated his remarks by giving a number of instances where the child born of a mother suffering from the disease was insusceptible to vaccinia for some time, but he held that this insusceptibility was only temporary.

The Members then proceeded by special car to view the sewage works which were carefully described by the Chairman of the Sewage Works Committee (Councillor Fieldsend), and the Manager of the Works (Mr. Kershaw).

The Members afterwards returned to the Town Hall where Tea was kindly provided by the Mayor, who again expressed his pleasure at having the Branch Meeting in Rotherham. After Tea the Mayor and Corporation were thanked for their hospitality.

North-Western Branch.—An ordinary Meeting of the Branch was held at the Chemical Club, Victoria Hotel, on October 28th. Present: Dr. J. B. Wilkinson (President), Drs. Berry, Garstang, Sergeant, Wheatley, Laird, Vacher, Hayward, Barlow, Ralph Young, Rhodes, Dearden, and M. Young; with Mr. J. Hall, Solicitor and Clerk to the Thornton (Fylde) C.D.C., and Mr. H. Fenton, Surveyor for the same district, as visitors.

Dr. J. B. Wilkinson delivered his Presidential Address.

A vote of thanks was proposed by Dr. Vacher, seconded by Dr. Berry, supported by Dr Garstang, and carried unanimously

The Bye-laws relating to New Streets and Buildings submitted by the Council of the Society, were laid before the Branch who had no further alterations or suggestions to make.

The Annual Dinner of the Branch was held in the evening of the same day at the Victoria Hotel, and thirty members and visitors were present. The King, the Incorporated Society, the President, and the Visitors were cordially toasted; and with the aid of a capital and for the most part impromptu musical programme an extremely pleasant evening was spent.

An ordinary meeting of the Branch was held at the Victoria Hotel, Manchester, on Friday, the 18th November. Present: Dr. J. B. Wilkinson, President (in the chair), Drs. Barlow, Wheatley, Berry, Vacher, Chadwick, Henry, Kenneth Fraser, Tattersall, Garstang, Niven, Gordon, Edlin, Sergeant, Dearden, and M. Young.

A letter was read from Dr. Parker, of Lancaster, stating that, so far as he could see at present, he would be glad to have the Annual Provincial Meeting to take place in Lancaster. It was resolved that in the event of arrangements being capable of being made for this object the President and Honorary Secretary be empowered to carry out the necessary details.

Dr. Sergeant moved that this Branch forward to Sir Shirley Murphy its hearty congratulations on the honour recently conferred upon him by the King.

Dr. James Wheatley reported verbally on the matters which had been discussed at the last meeting of the Council of the Society.

Dr. W. F. Dearden, J.P., then read a paper on "The Municipal Treatment of Physical Deterioration."

Dr. F. Vacher proposed that the best thanks of the Branch be given to Dr. Dearden for his excellent paper, which was carried unanimously. Drs. Vacher, Niven, Sergeant, Chadwick, Tattersall, Wheatley, and Young having discussed the paper, Dr. Dearden replied.

West of England and S.W. Branch.—A Meeting was held at the Board Room, Swansea Hospital, on October 20th, 1904. Present: Drs. Eben Davies (President), in the Chair, J. C. Heaven, Herbert Jones, Griff Griffiths, W. J. Thomas, J. D. Jenkins, Rice Morgan, Howard Jones (Hon. Sec.), A. Lloyd Jones, and Mr. C. A. Seyler, B.Sc., together with the following visitors, Drs. Alfred Hanson and Rhys Davies.

The Branch Representatives gave an account of the proceedings of the last Council Meeting in London, and Dr. Herbert Jones made a special reference to the establishment of a Public Health Library, and proposed that the sum of twenty guineas be contributed by the Branch towards the establishment of the Society's Library, on condition that it be a "Lending Library" available for the country members; this was seconded by Dr. Lloyd Jones, and carried *nem. con.*

Dr. Heaven who occupied the chair during the opening stages of the meeting thereupon vacated it in favour of the new President, Dr. Eben Davies. A vote of thanks to the retiring President, Dr. Tubb Thomas, was passed unanimously.

Dr. Howard Jones was re-elected Hon. Sec., and Dr. J. D. Jenkins, Hon. Treasurer.

It was carried that the Branch Council consist of the following members: the President, Hon. Sec., Hon. Treasurer, Drs. Symons and Walford.

The President followed with his Presidential address (*vide* PUBLIC HEALTH, Nov., 1904).

A hearty vote of thanks was accorded to Dr. Danes for his most interesting and instructive address, on the proposition of Dr. Herbert Jones, which was seconded by Dr. Howard Jones, and supported by Drs. Heaven and Griffiths.

Mr. Seyler read a short paper "On the import of CO_2 in Water." The paper was very instructive and original in character, and was followed by a demonstration of Mr. Seyler's apparatus for the estimation of CO_2 in potable waters.

Southern Branch.—A Meeting was held at the Grand Hotel, Hayling, on October 21st, 1904. Present: Drs. Norman, Fraser, Stephens, Willoughby, and Griffith, with Dr. Gedge as visitor.

Dr. Norman took the chair as President for the ensuing year. The suggested alterations in the Model Bye-laws, referred by the Parent Society, were considered, and the following resolution was passed: "That this Branch feels that it cannot consider the Bye-laws in detail, and adheres to its resolution passed at the meeting at Lewes."

Dr. Norman then read his Presidential address, entitled "Unofficial Sanitary Work," for which a hearty vote of thanks was accorded.

After lunch had been provided by the President, the members visited the Hayling Oyster Fisheries, where the various stages of growth, and the management of the oysters were demonstrated.

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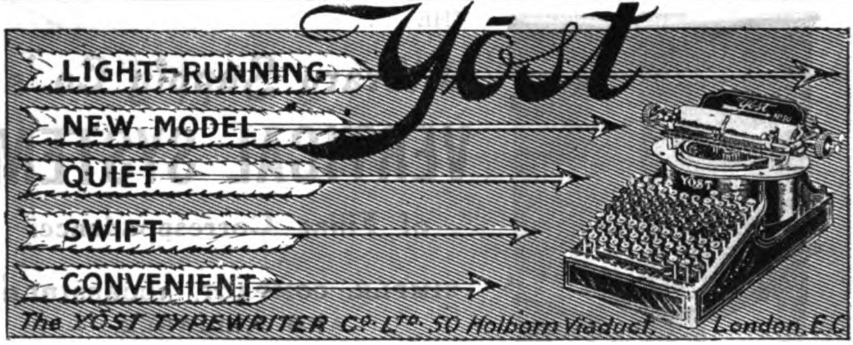
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SPECIAL NOTICES FOR THE MONTH.

MEETINGS OF THE SOCIETY.

At 9, Adelphi Terrace, 7.30 p.m.

Friday, January 6th, 1905. "The Report of the Inter-Departmental Committee on Physical Deterioration," by Sir Lauder Brunton, F.R.S.

Friday, February 10th, 1905. "The Reform of the Milk Supply," by Dr. G. F. McCleary, M.O.H., Battersea.

Friday, March 10th, 1905. "Disinfection of rooms—a comparative study," by Professor Delépine.

Friday, April 14th, 1905. "The administration of the Midwives Act," by Dr. G. H. Fosbroke.

The January meeting is on the first Friday in the month.

North-Western Branch.

December 16th, 1904, Victoria Hotel, Manchester. "Some Points in the Internal Administration of an Isolation Hospital," by Dr. A. Knyvett Gordon.

January 20th, 1905. "A Pure Milk Supply," by Dr. A. J. Laird.

February 17th.

March 17th. "School Sanitation and the Duties of School Medical Officers." by Dr. A. Greenwood.

April 21st. "The Midwives' Act," by Dr. E. Sergeant.

May 19th. "The Influence of Privy-Middens and Water-Closets on the Annual Epidemics of Zymotic Diarrhœa and Typhoid Fever," by Dr. A. W. Martin.

June 16th. "Discussion on the Housing of the Working Classes in Rural Districts." Opened by Dr. T. W. H. Garstang.

West of England and South Wales Branch.

December 15th, 1904, at Cardiff. 1.—Paper by Dr. J. D. Jenkins: "An Outbreak of Typhoid Fever due to Milk Supply." 2.—Paper by Dr. Scholberg. (Title not yet announced).

January 19th, 1905, at Bath. Visit to Bath Climatic Stations. Paper by Dr. Symons: "Notes on Meteorology."

February 16th, at Newport. 1.—The action of the Merthyr U.D.C. under the Housing of the Working Classes Acts, with Plans of Houses built; Dr. D. J. Thomas. 2.—Improvements desirable in the construction and administration of Slaughter Houses; Dr. J. Howard Jones.

March 16th, at Bristol. Papers by Dr. D. S. Davies, and Professor Kent (Professor of Bacteriology, University College, Bristol).

Continued on p. xii.

EPSOM COLLEGE.—Mrs. Skinner, widow of the late Medical Officer of Health for Willesden, is a candidate for a pension. Subscribers to this Fund are invited to give their votes in her favour.

DINNER TO SIR SHIRLEY F. MURPHY.—The Metropolitan Branch of the Society is to entertain Sir Shirley and Lady Murphy to dinner on January 27th. Other members of the Society and their friends desiring to be present on the occasion will be welcomed. Applications for tickets to be made to the Branch Secretary, Dr. Priestley, 333, Kennington Road, London, S.E.

THE SANITARY INSPECTORS' EXAMINATION BOARD.—An Examination for Certificates of qualification for appointment of Sanitary Inspector, or Inspector of Nuisances, under Section 108 (2) (d) of the Public Health (London) Act, 1891, will be held in London on Tuesday the 17th January, 1905, and the four following days.

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CURRENT PUBLIC HEALTH LITERATURE.

New York Medical Journal.

(May 7 and 14.) The diagnosis of Smallpox in the Papular Stage. By various writers.

(June 2.) Herman Brehmer and the Semi-centennial Celebration of Brehmer's Sanatorium for the Treatment of Consumptives; the first Institution of Its Kind. S. A. Knopf.

(July 16.) The Differential Diagnosis between Incipient Pulmonary Tuberculosis, Healed Cavities, and Non-tuberculous Fibrosis. Geo. W. Norris.

(August 13.) Is Milk a Factor in the spread of Tuberculosis? J. O. Cobb. (He considers its etiological significance is very much over-rated.)

Journal of Medical Research, Boston.

(February) The Pathological Anatomy and Histology of Variola. W. T. Councilman, G. B. Magrath, and W. R. Brinckerhoff.

The Life History of Cytoryctes Variolæ, Guarnieri. Gary N. Calkins.

Occurrence of Cytoryctes Variolæ, Guarnieri, in the Skin of the Monkey Inoculated with Variola Virus. G. B. Magrath and W. R. Brinckerhoff.

Etiology and Pathology of Vaccinia. E. E. Tyzzer.

Experimental Variola in the Monkey. G. B. Magrath and W. R. Brinckerhoff.

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The Infectiousness of the Blood in Variola. G. B. Magrath and W. R. Brinckerhoff.

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The Central Nervous System in Variola. E. E. Southard.

Clinical and Experimental Study of the Bacteriolytic Complement of the Blood Serum in Variola, Ralph L. Thompson.

Clinical Observations on Variola. I. R. Bancroft.

(May.) Chronic Subcutaneous Abscess in Man containing Acid-proof Bacilli in Pure Culture. W. Ophüls.

Occurrence of Bacillus Pseudodiphtheriæ in Cow's Milk. D. H. Bergey.

A Motile Culture of Bacillus Dysenteriæ. Charles Hunter Dunn.

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Study of a Chronic Infection and Subinfection by the Colon Bacillus. George A. Charlton.

Study of the Blood of Normal Guinea-pigs. Samuel Howard Burnett.

Dysentery Bacillus Group and the Varieties which should be Included in It. Wm. H. Park, Katherine R. Collins, and Mary E. Goodwin.

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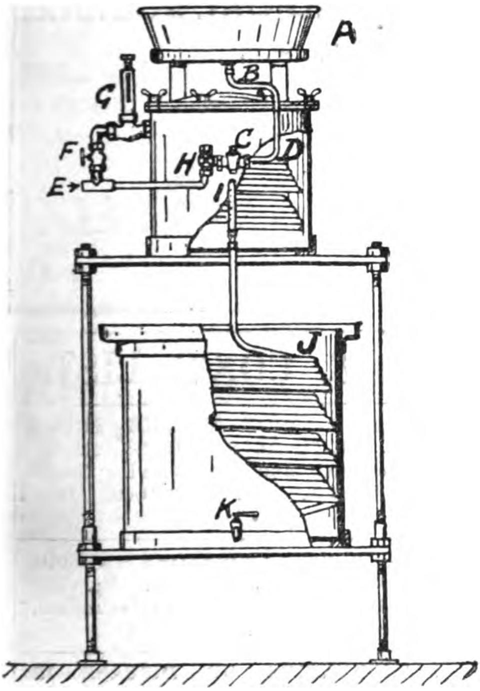

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CONTENTS.

No. 4, Vol. XVII., January, 1905.

EDITORIAL—

Rural Housing and Rural Bye-Laws - - - - 203

SPECIAL ARTICLES—

Instruction in Hygiene in Universities and Schools.—A Proposal (*G. A. Heron, M.D., D.P.H., F.R.C.P.*) - 207

Medical Inspection in Day Schools (*James B. Wilkinson, M.D., C.M., D.P.H., F.C.S.*) 225

The Municipal Treatment of Physical Deterioration (*Councillor W. F. Dearden, M.R.C.S., D.P.H., J.P.*) - 237

An Outbreak of Diphtheria traceable to Ulcers on Cows' Teats (*Wm. Robertson, M.D., D.P.H.*) - - - 246

Dried Milk (*Joseph Priestley, B.A., M.D., D.P.H.*) - - 251

ANNOTATIONS—

County Medical Officerships - - - - - 206

Professor Robert Koch - 224

Enteric Fever & Ice Creams 224

Smallpox and Tramps - - 224

New Rules for Diphtheria Quarantine - - - 236

The Prevention of Consumption - - - - 236

(*Continued on Page vii.*)

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CONTENTS—*continued.*

PAGE

ANNOTATIONS (*continued*)—

Ankylostoma in Coal Mines 245
School Children and Vaccination - - - - - 245
The Factory and Workshop Act - - - - - - 250
The Stirling County Council 253
Control of Water Supplies 253
The King - - - - - 253
Practical Hygiene for School Teachers - - 266

LAW REPORTS—

Thompson *v.* Mayor, Etc. of Eccles - - - - - 254
Haedicke *v.* Friern Barnet Urban District Council - 254
Bradford *v.* Mayor of Eastbourne - - - - - 254
Garlick *v.* Knottingley Urban District Council - 256
Hauis and Others *v.* Scurfield 258
Mcnair *v.* Horan - - - 259

PAGE

LAW REPORTS (*continued*)—

Wanklyn & Cooper *v.* Biggs 260
Frost *v.* Aylesbury Dairy Co., Ltd. - - - - - 260
Hull *v.* Horsnell - - 263
Jones and Others *v.* Corporation of Welshpool - 265
Selling Mussels Unfit for Food - - - - - - 266

REVIEWS—

Bacteriology and the Public Health - - - - - 267
Sanitary Measures in India 267

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH, THE—

North-Western Branch - 267

CURRENT PUBLIC HEALTH LITERATURE - - - 268

NOTICES - - - - xi-xiii

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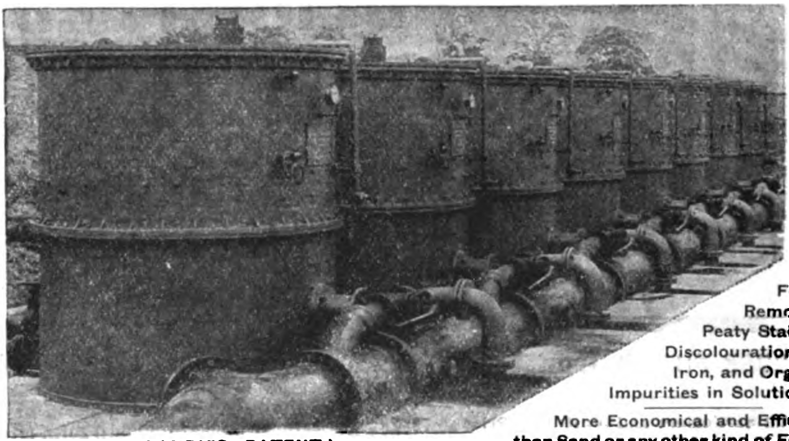

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PUBLIC HEALTH:

The Journal of the Incorporated Society of
Medical Officers of Health.

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EDITORIAL.

RURAL HOUSING AND RURAL BYE-LAWS.

WHEN, some few weeks ago Mr. Justice Grantham submitted a somewhat crude plan of a cottage he wished to build to the Chailey Rural District Council, he could not have foreseen the widespread interest which his action has aroused. Cottage building in rural districts has been at a standstill for many years, and persons who would willingly stay in the country are forced into the towns by the lack of suitable accommodation. Landlords now complain that the reason why they do not provide decent cottages is that the enforcement of the strict provisions of the bye-laws makes the cost prohibitive—but they do not explain why existing houses are allowed to become dilapidated and insanitary. Headed by the learned judge, a large and influential deputation waited upon the President of the Local Government Board to lay before him an account of their actual experience "of the hardships, difficulties, and (or) impossibilities of complying with the rural district bye-laws" in relation to the building of cottages. The general purport was :

> (1) That the bye-laws governing the building of cottages in the country are enforced by those who either have (*a*) no knowledge of the *locus in quo*, (*b*) no knowledge of the wants and requirements of the district, (*c*) no ability to administer them, (*d*) an interest against the landlord or person desirous of building, (*e*) a desire to administer bye-laws suitable for towns, but most unsuitable for country districts, or (*f*) a desire on the part of the councils, or officials of the councils, to strain the language of the bye-laws against the building owner, and instead of assisting him, throwing every obstacle in the way of his carrying out the desired work ; and (2) That hundreds more cottages would have been built all over the country, which would have prevented to some extent the people from crowding into the towns, if there had been (*a*) more suitable bye-laws, (*b*) an elasticity allowed to those who administered them, or (*c*) if there were no bye-laws in those places or districts where there is no necessity to enforce them.

Naturally, one would expect the gentlemen who formed the deputation to know something of their subject, but at least some of those who spoke seemed to be ignorant of the fact that there are in existence model bye-laws specially formed by Mr. Long to suit the requirements of purely rural communities, and Sir William has had the courage to admit he "had never heard of them before." Unfortunately for him it is these very bye-laws against which Sir William has been kicking, for the Chailey Council had recognised that the old bye-laws were unsuitable, and had gladly adopted the new ones soon after they were issued some two years ago. Mr. Long, in replying to the deputation, gently enlightened the hundred members thereof on this point. He said :—

> "It had been suggested by two or three speakers that the responsibility of the Local Government Board in this matter was very much more real than, as a matter of fact, it was. It was not the duty of that Department to force bye-laws upon any local authority, nor was it their practice to do so. The duty of the Department was to frame model bye-laws, one set for urban districts, and one set for rural districts, but it was open to a rural local authority to apply for the urban bye-laws if they considered that their application was desirable in their district. The invariable practice of the Local Government Board, when applications were made either to approve a set of bye-laws or for the extension of urban bye-laws to rural districts. was to do their best to investigate the local circumstances, and to satisfy themselves that there was need in that rural locality for the urban powers. And when they came to the examination of the bye-laws, they returned again and again to the charge in their correspondence, and begged the local authority to satisfy themselves that these bye-laws were really applicable to the district over which they presided, and would neither interfere with local enterprise nor inflict injustice upon any individual. He did not really think, if they were to have anything in the form of local government, it was possible for a central department to go further than that. He was not quite sure that the bye-laws were really as guilty as some of the gentlemen seemed to think. He had some personal experience in the matter of providing houses for labourers, and, knowing that there were practical difficulties to be met with under the then existing bye-laws, one of the first things he did on coming to the Local Government Board was to examine and overhaul the two sets of model bye-laws. He started with the idea that it might be possible to have three sets—urban bye-laws for populous urban districts, rural bye-laws for purely rural districts, and an intermediate set which would be applicable to those rural districts which were in the process of transition and were passing from country into town. The rural code was drawn up in the Department and approved by him. He believed that code could not be condemned in respect of any of the charges brought against the urban code or the old rural code. This new code dealt with the three subjects of sanitation, stability, and prevention of fire. In his judgment, in dealing with cottages in purely rural districts, stability was not a matter of concern to anybody except the owner and the tenant, and he decided that that provision should be left out altogether. In regard to prevention of fire, so long as the cottages were detached he thought the bye-laws need not in any way interfere; but with reference to sanitation, it was the duty of the department

to frame bye-laws which should be applicable to all that was involved in that matter. Any rural local authority could apply to withdraw the existing bye-laws, and could obtain in their place the code which was drawn up two years ago. He was prepared to examine that code again with every sympathetic desire to remove unwise and unnecessary restrictions, though if it was examined he believed it would be found to be on the whole a workable code. He rather gathered from Sir William Grantham's speech that it was not so much the bye-laws that were condemned as the people who administered them. It was not his business to create local authorities or to appoint their officials. If they were not satisfied with the local authorities they must turn them out and put better ones in their place. As to the officials, however, though he wished to speak of them with the utmost respect, he was bound to say that too often cases came under his official notice in which local authorities did not exercise enough care or caution in the selection of those who were called upon to exercise very considerable powers as their servants. They were too apt, in some cases, to elect men who were not qualified, who had no technical training or experience, for the work they had to perform. It had been suggested that he should appoint a committee, or that, at least, he should obtain the counsel of some of those who had practical experience in this matter, in order to see whether further changes could not be made which, while they would not in the smallest degree be calculated to destroy the sanitary and wholesome conditions of the houses in which the poor were to live, would not expose people to the kind of trouble to which Lord Coventry and Mr. Pell had borne testimony. That was a suggestion which should receive his most earnest consideration. It certainly was absurd and ridiculous that where they had got mostly fields and trees, where there was no probability of a large number of houses over the whole of the area, they should have rules applied which were only intended for towns or places where there was an aggregation of houses. He hoped the proceedings of that day would help to remove some, at all events, of the misapprehensions which were abroad. He was very anxious that there should be nothing which they could avoid in that Department which should militate against the provision of satisfactory buildings for the working classes who lived in the country. He was aware of the fact that that deputation had given rise to a fear in the minds of some people that the suggestion was going to be made that they were to have an inferior class of houses. No such suggestion had been made there that day. The whole spirit of the deputation had been in the contrary direction."

We have quoted Mr. Long's reply at length because it lays down very clearly what he considers the essentials which should be required in a house, whether it be in town or country.

We doubt if the recent bye-laws thus especially prepared for rural districts offer so much difficulty as is alleged by many of those who have lately written or spoken on the subject. We rather incline to the belief that they offer no great difficulty to those who desire to erect dwellings of a kind in which persons may be housed under healthy conditions. The men upon whom the bye-laws press severely are those of the jerry-builder class, who do not care what may be the subsequent end of either the cottages they erect or the people who may occupy them. It is absolutely necessary that sanitary authorities should be empowered to see that buildings should be erected of suitable materials and in a proper manner. We have the example of certain parts of Essex, in which at one time habitations were being erected of old packing cases, biscuit boxes, galvanized iron, etc.

The difficulty which most would-be builders of cottages experience is that of expense. It has been often stated that the agricultural labourer can only afford to pay 1s. 6d. or 2s. per week in rent, and, with the present price of building material and labour, it is alleged that architects have not been able to design dwellings which can be let at these low figures. Hence Sir William Grantham's laudable though somewhat crude attempt to produce a house which should be both cheap and good. Whether the learned judge has succeeded or not we cannot tell from the copy of the plan published in one of the daily papers, but we believe there are architects who have been successful in doing so, and some practical illustrations of what can be done in the way of building cheap country dwellings will be provided at an exhibition which is being organised by the *Country Gentleman*.

The exhibition is to be held on the land of the Garden City Company, at Letchworth, and examples of cheap cottages suitable to the various localities in Great Britain will be invited. In most localities there are local materials, and an effort will be made to demonstrate what are the cheapest available materials in different districts.

It is proposed to hold the competition from July 1st next to September 30th, and prizes will be presented to the competitors.

COUNTY MEDICAL OFFICERSHIPS.—The Norfolk County Council has had under consideration the question of the appointment of a Medical Officer of Health. The remarks of some of the members, as given in the local press, betray so little knowledge of the subject that they may be commended to the attention of the President of the Local Government Board. Thus Mr. Mason said it would be difficult to find a Medical Officer of Health who could properly work the Midwives Act as well as the health of the county. Col. Hyde thought any discussion on the subject of the appointment of a Medical Officer of Health was premature. Mr. H. Broadhurst, M.P. said it appeared to him that the contemplated Medical Officer of Health to the whole county would be a fifth wheel to the coach. It would be an additional permanent appointment, at a heavy charge, running into pensions and all sorts of things. Once they started these new posts, they never got rid of them, and he did hope that the Committee would see that there was some feeling in this matter. Some of the Council appear to have been alive to the need for such an officer, but unfortunately for the County they were in a minority.

INSTRUCTION IN HYGIENE IN UNIVERSITIES AND SCHOOLS.—A PROPOSAL.*

By G. A. HERON, M.D., D.P.H., F.R.C.P.

Mr. President : Before entering upon the subject we are here to deal with this evening, I wish, Sir, to thank you very warmly for the honour you did me when you invited me to open a discussion, or to read a paper before this Society.

Of the great importance of our subject there can, I am sure, be no doubt; and the members of this Society are men whose criticism of what I have to say will be of great value.

Every medical man who has studied the subject, must have been surprised to find how deep is the ignorance of many people, in all ranks of life, concerning what ought to be common knowledge of the laws of hygiene. If need be, it is easy to convince oneself that this is true. There are frequent lapses from what should be, even among those best informed about the laws of health. As we all know, in Harley Street and Wimpole Street, on almost every door, a name upon a brass plate tells that a doctor lives in the house. Indeed, on not a few of the doors in those streets, there are many brass plates with names on them. In those houses, more or less filled with doctors and their families, there are to be seen of a night very, very few open windows in the bedrooms. Seeing this, one cannot but think that if doctors, who are the great teachers of hygiene, prefer to shut out, especially of a night, fresh air from their bedrooms, one should not be surprised to find that the other classes of the community also, and to an equal extent, deny themselves the use of fresh air—one of the very few things necessary to life which, if certain politicians had their way, might possibly remain untaxed in this country. If you want to see other examples of how stuffy rooms are beloved of men, take a walk down St. James' Street and Pall Mall, and count the windows that are open in the clubs where are gathered together those who represent wisdom in politics, in literature, and in science. If you do this, do not forget to count the windows which are open in the Royal College of Physicians! It will not take you long to do all this counting, even if you extend your walk down Parliament Street, and there count the open windows in the Government buildings, where toil those who guide the affairs of this great Empire.

Again, what odd notions people have about "taking a chill," and

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* Read at the Meeting of the Incorporated Society of Medical Officers of Health on November 11th, 1904.

"catching a cold"! I think that people who are wont to wax eloquent about these two popular bogies are, for the most part, those who regard an open window in a sitting room or a bedroom, or in a carriage on a railway, or elsewhere, as something of the nature of a social pest.

Yet again, it would be difficult to find a medical man, whose professional experience was even of the smallest, who did not know something of the depths of ignorance among mothers, and especially among young mothers, concerning how young infants and children should be fed. Of the value of milk as the only food suitable to young infants, very many mothers know little; but their faith in the worth of artificial foods for young infants and children is unbounded. It ought to be a matter of common knowledge that evil, and even fatal effects, are only too often directly due to putting into practice these oddities of popular belief.

To say that a disease is communicable, is to admit that it can be prevented. When people clearly grasp the meaning conveyed in that sentence, and act upon it under the guidance of the medical profession, they will then know that the prevalence in it of communicable disease is discreditable to a community. And we doctors must ever keep prominently before people the fact that communicable disease is the greatest cause of death save one, and that is ignorance, which is the chief cause of disease. Now there is but one way of getting rid of disease, and that is by preventing it. This, in no small measure, the medical profession has already done. For example, to mention only some of the modern achievements, cholera, typhus, small-pox, relapsing fever, malaria, typhoid, scarlet fever, and last, and most important, tuberculosis, are diseases more or less, but distinctly, under control. Give the medical profession such powers as are rightly given to the Civil, Naval, and Military authorities in time of need; give us freedom to use to the full, and in the best interests of our fellow men, the knowledge we even now have, and it is as certain as anything can be that, within the lifetime of the next generation, a reward in the shape of diseases and deaths prevented, will be reaped, that would make an epoch in the story of human progress.

But, Sir, we must do one thing first of all, and above all, before we can hope to reach this great end. We must educate the people in the laws of health. In no other way known to me, can we get the support of that public opinion which, in every free country, is the foundation of all true progress. And how are we to do this in the surest and quickest way? Well, Sir, I believe the surest and quickest way is to educate the children in our schools, and all students in our universities, in the laws of hygiene, or at least in some of those laws. The need for widespread knowledge of matters touching the public health has been strongly felt, and often expressed both at home and abroad. Besides this, there is ample evidence to show that the medical profession in most, I think in all countries, is strongly in favour of the teaching of hygiene being made a compulsory part of the lessons taught in schools, and of the work done in universities.

But why discuss a subject about which we are in agreement! To this I reply, as in effect I have already said, that the chief object of this paper is to try to bring out the opinions of those who are here to-night, as to the best way to secure for school children and university students this particular kind of teaching. It was some years ago, in a paper I was invited to read at the Southampton Meeting of what is now the Royal Sanitary Institute, that I first dealt in public with this subject. At that meeting my proposals were unanimously adopted. So far as I know, there the matter ended; at all events I never heard that the Council of the Institute took any notice of that unanimous vote, though by it the Council was asked to take action.*

Next I wrote one or two papers, and so tried to urge these views upon any one who might care to take an active interest in the subject. No doubt the usual fate of their kind befell these papers, and I suppose nobody read them.

In Paris, in May, 1903, I brought these proposals under the consideration of what is known as the Inner Council of the International Society for the Prevention of Tuberculosis. Among the members of that Society are medical men from every country of importance in Europe and America; and in its Inner Council every important country on those continents is represented by medical men. It would, I think, be very difficult to get a better expression of cosmopolitan medical opinion, than is to be had from a representative gathering of the Inner Council of this International Society; and the Paris meeting of May, 1903, was a representative gathering. My colleagues on that Council, after having heard what I had to say, appointed a committee of their number to report on the matter, with a view to its being considered at the next congress of the members of the Society. The committee-men appointed for this purpose were Blumenthal, Calmette, Landouzy, Linroth, Lorentzen, and myself. The report of the Committee was favourable and unanimous, and I was directed to submit my proposals to the next Congress of the

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* After this paper had been printed, Mr. Whitaker, Chairman of Council of the Royal Sanitary Institute, wrote to tell me, what I had not before heard, that his Council, after the Southampton meeting, sent the first and second of my proposals to Sir John Gorst, who was then Vice-President of the Council of Education, and proposals 4 and 5 to the Local Government Board.

Society. This took place in Copenhagen, in May, 1904; and perhaps, Sir, you will allow me to read these proposals now in the words in which I submitted them to the Copenhagen Conference, by which they were unanimously accepted:—

1 "That this Conference approves of the proposals relating to popular education in matters of public health made by the Committee appointed by the Inner Council at the meeting held in Paris on May 5th, 1903.

2. "That at least one person in each nation, represented in the Central International Bureau for the Prevention of Consumption, be authorized, either now or at the earliest possible opportunity, by the Central Bureau, to devise for his own country the measures he believes most likely to secure for those having jurisdiction over the affairs of education in schools and universities, assistance in putting into practice the principles indicated in the report adopted by the Committee . . . .

3. "That the person so authorized shall, as soon as possible, obtain the assistance of at least two of his fellow countrymen, who, from their public position, may be able to help him to carry out the work entrusted to him by the Central Bureau.

4. "That each of these National Committees shall report upon their work and its results to each ordinary meeting of the Inner Council, and to each Congress and Conference."

The Copenhagen meeting unanimously accepted these proposals, and resolved, "That delegates be appointed by the Conference to promote in each State education in elementary hygiene in schools and universities, to be followed by an examination in that subject." . . . .

Well, Sir, can these proposals be put into practice in our schools and universities? In our universities this could, I think, be done by leaving the matter where it always must remain, in the hands of the authorities of each university. Additional lecturers, perhaps additional professors, would be required; and if, as I submit ought to be the case, attendance upon a course of instruction in hygiene were made compulsory on every student of the university, the resulting fees would more than meet the necessary expenses. The success or failure of this movement, so far as the universities are concerned, will depend upon the amount and kind of public support given to the demand for instruction in hygiene. I incline to believe that the universities will not come forward to help in this matter until hygiene has been taught for some years in our schools, and the public opinion so formed will come to the help of the universities and encourage, and by grants of money enable them, to open to all their undergraduates this new departure in university work. As a matter of course, the work of the undergraduate who studied hygiene as a part of his medical curriculum, would be kept quite distinct from the teaching in hygiene given to the student who did not intend to take a degree in medicine. The knowledge of the laws of hygiene required of the student of medicine would, naturally, be much wider and deeper than that required of other undergrauates.

I think it is in our schools that we should begin the popular teaching of hygiene. The universities would fall into line later on, when the demand for this kind of teaching became marked. Now as we are, I believe, all agreed that the school children should thus be taught, it should be well worth while to consider where the necessary teachers are to be found. My proposal is, that an effort should now be made to induce the medical profession to help on this movement by teaching hygiene in our schools. It is true that, even were they all willing to undertake it, doctors are too few to do all the needful teaching. I do not know how many thousands of schools there are in the United Kingdom. So far as I can ascertain, that information is known to no one. Certainly, counting our schools of all kinds and conditions, there are thousands of them. Of medical men now in practice in the United Kingdom there are, according to the Medical Directory for this year, 30,422. The inhabitants of the United Kingdom numbered in 1903, 42,372,556. A little sum in division shows that, were work equally distributed, each doctor would have less than 1400 persons from whom to draw his practice. It needs but a short experience of the struggle for work, and especially for remunerative work, in the profession of medicine, to convince doctors that practice is very far from being equally divided amongst them. Some have much more than their share of it. Indeed, of by no means few doctors, including a fair number of those who are no longer young, it is true to say that, after having seen all their patients, there remains to them on most days a substantial residue of spare time. Now, there can be no doubt that doctors are, of all men, best fitted by education and by their everyday work to give instruction in the laws of health. Many of them, and especially the younger men, are highly educated in sanitary science. Out of their enforced leisure not a few doctors would, very likely, willingly take time for the teaching that is wanted. Also, teachers could, I think, be had from among doctors who had retired from the active practice of their profession. There is a large number of students of medicine in their fourth or fifth year of study who, probably, would gladly undertake the work at certain seasons of the year. The offer of the post of teacher of hygiene in a school should, unless there is good reason to the contrary, be first made to the medical adviser of the school, next to the Medical Officer of Health for the district, and failing both these, to a general practitioner or to a consulting physician. Failing all these, an effort should be made to secure the services of a senior student of medicine, recommended for the post by persons entitled to express opinion on such subjects.

Those who aspire to become school teachers by profession, should be required, before they begin to teach, to give satisfactory proof that they have a sufficient knowledge of hygiene for teaching purposes in schools.

Sir, when I accepted the invitation to come here to-night with which you honoured me, I made up my mind to ask the Society to give real help to this movement. Would it not be doing a service to many a man who is a Medical Officer of Health, if you could help him to add to the good he does in the community in which he works, by letting it be known that Medical Officers of Health, if only the offer be made to them, are ready and willing to carry out teaching of this kind in schools and in universities? Is it not possible for you to-night to entrust to a small committee of your number the consideration of this question, and if the committee approve of these proposals, perhaps they would suggest a plan by which to elicit the views of Medical Officers of Health as to their taking up this teaching. This would be a beginning; and that step once taken, I think our Boards of Education should be approached, and an assurance given to them, that it will not be the fault of the Medical Officers of Health if the medical profession, so far as they represent it, does not heartily lend itself to teaching the young how important to the individual, to the family, to the nation, is a working knowledge of the laws of health.

I have mentioned the Boards of Education. Sir, I have good reason to know that the English and Scottish Boards are fully alive to the importance of this subject. Without the help of the Departments of Education in England, Scotland, and Ireland, it would be useless to attempt to carry out these suggestions, or to try to bring members of the medical profession into active sympathy and touch with this new departure in education.

If you will give the question your favourable consideration, and, in the form you think best, convey your approval of these proposals to the Departments of Education, you will, I am sure, there find your suggestions and your views listened to with attention, and considered with care.

It is, I think, a statment of fact to say that in sanitary progress our country leads the way. If we wish to keep this proud place, we shall not neglect to note what other nations are doing to secure teaching in hygiene for school children.

So far as I know, the country which has done most in this direction is Prussia. There pupils in the National, Middle and Higher Schools, in the Gymnasia and in the Polytechnic Gymnasia, are now taught something of the laws of health. The younger children are taught a little about the structure of the body, and about how to eat, and play, and work, and rest. The older pupils are taught more in detail, and on broader lines. The oldest pupils have to give special attention to the subject of hygiene, as it affects the individual, the family, and the State.

In 1902, the Prussian Minister of State who looks after national education, ordered that in every school in Prussia the evils of alcoholism were to be brought before the pupils in an emphatic way. I confess that, when I read this announcement, I could not but admit that there are moments when one longs for a touch of a form of government, which should give a free hand to Ministers of State, provided they are of one's own way of thinking! In this country we need this teaching about the evils of alcoholism quite as much as they need it in Prussia.

In America an elaborate plan for teaching hygiene in schools is under consideration, and has already received substantial support. According to this plan the teaching is to begin in the very first year of school life, and is then to consist of oral instruction about play, sleep, eating, drinking, clothing, cleanliness, etc., etc. Each year of school life is to see this plan widened and deepened, until in their last year pupils are taught in some detail about the structure of the body, the evils of drink, the meaning of fermentation, the work of bacteria, disease and its prevention—and so forth.

In Norway, Sweden, and Denmark, very considerable attention is given in schools to the study of hygiene by, I understand, children of all ages.

In France some progress has been made, by way of getting the subject of hygiene noticed in certain schools; and I imagine the lines of instruction in hygiene will eventually be laid in France on the plan now being suggested for America.

Under No. 2 of the proposals to which I have already referred, and which were unanimously passed by the Copenhagen Conference last May, the Central Committee of the International Association for the Prevention of Tuberculosis has asked me to act under their authority in this country.

Well, Sir, I am here to-night to beg you to help in this matter. In my opinion, three factors are essential to success in this crusade against ignorance: (1) A favourable public opinion; (2) The support of the Departments of Education of the United Kingdom; (3) The help of the medical profession throughout the British Isles.

Sir, I believe that among the Medical Officers of Health of this country are those best able to teach hygiene in our schools and universities. Will you take action of the kind, and in the way you think best suited, to show the Departments of Education that you heartily support the movement for bringing a knowledge of hygiene within the reach of every boy and girl, and young man and young woman in this country? Do you believe you can overrate the worth of such an education? Put its worth no higher than its value in pounds, shillings and pence, and I say you cannot overrate it. Knowledge is power. Yes, and it is a mightier power to-day than it was when the youngest of us was a boy; and it is the power that is going to rule and guide mankind in the near future, as nothing else has yet ruled and guided our race.

DISCUSSION.

The President, in declaring the discussion open, said that he was pleased to find that they were honoured with the presence of a number of distinguished visitors, whose views would be very welcome to the Society, and he trusted that they would take their part in the proceedings.

Sir Henry Craik, K.C.B., LL.D., Secretary of the Board of Education for Scotland, said that he was very glad indeed to be present that evening, and that he had listened with very great interest to Dr. Heron's paper. He could only offer some suggestions that occurred to him as to the educational administration. For the present he would pass over the question as to whether it was possible to carry on this teaching both in the Universities and the elementary schools. Was it feasible to expect from the whole of their students in the Universities, knowledge, even of a not very advanced kind, which had to be acquired by them not for professional purposes but merely as students at the Universities? Would they not be asking that of the students who were about to enter other professions? Were they not building upon the present state of things when they had not got at the school that elementary knowledge which Dr. Heron had shown to be necessary for every well equipped citizen? If a boy had given to him a fairly good system of hygienic instruction, what more could he do at the University, unless he was going to be a medical man? The next question that occurred to him was that they spoke of teaching this subject in schools, and Dr. Heron rightly showed that the principle of the subject was recognised by the Boards of Education. He, the speaker, spoke for his own Board; they felt every day more the need for the intervention of medical science and the active aid of the medical profession in the schools. They had been all along of the opinion that their aid was wanted, but he had some doubts whether it was to be supplied by an attempt to make all their teachers into doctors. It was a matter of considerable difficulty. If they tried to give a man that little knowledge which is a dangerous thing, he might perhaps set up his opinion against the real expert and scientific man. What they wanted was the intervention and the aid of the doctor in the school, for supervising, for seeing that the proper rules of health were observed; for advising and reporting upon the subject of hygiene for which they were specially fitted. No doubt there was a difficulty. They wanted to give certain instruction to the younger scholars, but they should remember that instruction to the younger scholars must be largely dogmatic. Obviously, they could not teach infants reasons for all the laws of nature. They must teach them what they have to do. That instruction could probably be given by the teachers, if they could give to the latter that elementary knowledge and sound common sense which was to be gained by attending a course of lectures on hygiene. Not attempting to make them experts, but giving them clear instruction as to the rules they have to observe in the care of their bodies and in daily life. For this he pointed out there were opportunities open of the most ample kind under the Code which he administered. They had established classes for the teachers throughout their schools. Classes for giving teachers instruction in subjects which they would not learn in the training colleges. Among the special subjects they found useful in their schools was physical instruction, in which subject a number of classes had been opened. He, personally, would exceedingly like to see more classes opened in hygiene, and suggested they should induce local authorities to assist. He advocated the system adopted by his Board, which paid three-fourths of the expenses of their classes, even including the travelling expenses of the teachers to go to those centres for instruction. This arrangement left a very small burden on the locality, and he personally was surprised that more classes had not been established. That system would, he thought, give them men fairly trained, so that they could impart to their scholars that common sense and clear enunciation of rules which were, in his opinion, the best thing for the scholars to learn. Later on they could go to the scientific rules upon which the basis rests. He thanked them sincerely for being allowed to express his views.

Miss Ravenhill said that she spoke with much diffidence as a humble member of the teaching profession. She desired to express her great sympathy with the movement which she hoped would be initiated that evening, and considered that they had a lot to learn from the long experience of hygienic instruction which had been carried on in America. Three years ago, as the result of a Commission, she had been sent to the United States to study the methods of hygienic teaching in American schools. She had found that, mainly owing to the efforts of women, the one compulsory subject in American schools was some instruction in the laws of health. Reading, writing and arithmetic need not be taught, but instruction in the laws of health was compulsory. Further, the text books were required to include some chapters on the evils of alcoholism and narcotics, yet head teachers in conjunction with medical men had found it undesirable to accentuate that side of alcoholism. However, about two and a half years ago, in consequence of the action of a number of large temperance organisations, legal measures were taken to ensure the teaching of the evils of alcoholism and narcotics to children, but not under the age of twelve years. It had been found that dogmatic teaching fails to influence habits, unless the teaching is closely associated with life. That is to say, they should correlate their instruction with the right conduct of life. Otherwise the instruction merely goes in at one ear and out at the other, and has no direct influence on the life. It was felt that there had been time to form this influence after twelve years of age. She was of opinion that where teachers are carefully trained, hygiene can be most admirably correlated with every subject. She had had the great privilege of undertaking the training of teachers in practical hygiene for some years past. She had been given a free hand, and had submitted her method to all the authorities in the country. It consisted chiefly in submitting every form to observation. The child at an early age is interested in the simple requirements of plant life. It then passes on to insects and to animals, quite naturally, up to the age of ten or eleven years. It is then led on to more advanced subjects. She felt that it was the normal, not the abnormal, the positive and not the negative, that must be impressed everywhere to form character. With regard to teachers, they all knew that medical men were most admirable experts in their subjects, but the course of medical training did not include teaching how to teach. They would, she thought, all admit that a member of the medical profession entering a school would not even be able to bring down his teaching to the level of the rest of the school programme, or to put it in words, or use methods suited to children. Such methods required simple, practical demonstration. Then she would remind them that the remuneration of teachers was not so excessive as to tempt medical men to do the work. As to physiological principles, not only was it wrong to bring them to the notice of children before they could understand, but such a proceeding only disgusted them. In regard to hygiene as a subject for University teaching, it had attained that position in America for some years past. As to the demand upon the student, she considered that in conjunction with his physical training he should continue such a further study of physiological principles of hygiene as were inappropriate in the lower grades of education. In conclusion, she would like to state that at the Chicago University, and also at the Columbian University, no student was admitted to the course of economics unless he could show that he had studied sanitation. She thanked them for the kind manner in which they had listened to her remarks, and sincerely hoped that some benefit would result from the evening's discussion.

Dr. A. Newsholme was strongly of opinion that dogmatic teaching does not influence the habits of the individual. It appeared to him that the main thing was that the teachers themselves should know the elements of the laws of health. Although he was of opinion that a very large proportion of the medical profession were incapable of teaching children, he thought that doctors should be entrusted with the teaching of hygiene in the training colleges, and he ventured to hope that Dr. Heron's paper would be followed by some practical steps in that direction. A large amount of hygiene had been taught in the past in connection with the Science and Art Department, but he did not think it had always been good. For many years he had been an assistant examiner in connection with that department, and he had had an opportunity of collecting some answers which occasionally afforded considerable amusement. They were no doubt aware that the course included ambulance work as well as hygiene proper. A student replying to a question as to the proper treatment for a scald, said that the best thing was to rub in vinegar for three minutes, or croton oil. A reply as to what should be done in a case of carbolic poisoning was that an emetic should be given, then artificial respiration performed. Another, in reply to a question as to a dog-bite, said, " If any person is handy and foolish enough to suck the bite, let it be done." " Burn it out with a cosmetic " was the answer of a third. Another candidate said that the best way to avoid impure water was to have it direct from the main sewer. A small boy's idea of a cistern was " a receptacle in the maid's bedroom, for slops." " Nitrogenous foods help to build up the waist of the body." " Coffee is adulterated by adding brick-dust, and sometimes by ground cayenne pepper, but chiefly by additional chicory." They had all read various descriptions of the method of boiling meat, but the following was a novelty: " Let the meat simper until finished." Again. " Icebergs are not a desirable source of water supply, as they may not be made of pure water." "Cesspools are among the chief sources of water supply," and "Some water supplies come from artisan wells." These were illustrations of the kind of teaching that had been given. No doubt many young people acquired an elementary knowledge of hygiene, but what was wanted in schools was not so much the teaching of scientific terms as the hygiene of actual daily life. He did not recommend practical teaching on the principle of Mr. Squeers, of Dotheboys Hall—"Spell winder, and go and clean it." They might notice the opening of a window in the intervals of teaching. A great deal might be done in teaching children to be clean and the importance of fresh air, but the teaching must influence habits. Mere dogmatic teaching would not do unless it could be associated with practical illustrations. He was heartily in sympathy with Dr. Heron's views, but was not clear on the point of doctors teaching children. He would have the pleasure of proposing a resolution at a later stage of the meeting, which he hoped would tend to help forward the movement.

Sir Patrick Manson said that he was particularly interested in the subject, as he was at the present time urging upon the Colonial Office the desirability of giving some instruction in hygiene in the elementary schools throughout the colonies. It was obvious that disease was a most expensive item to the State, and that anything that would tend to prevent disease would be of enormous value to the community. He alluded to the terrible mortality resulting from easily preventable diseases. The difficulty the Government had to face was the ignorance of the natives. If the negro and the Indian could realize an intelligent idea of hygiene, the Government would have very little difficulty in getting important hygienic measures carried out. In his opinion the only way to convert the aged negro or aged Indian to the benefits of hygiene was by a miracle of some sort, and therefore he thought it was useless to attempt anything in their direction. But if the young negro was caught early in life, and educated in the principles of sanitary science, he, the speaker, thought that later on he would be more willing to accept any measure suggested to him for his benefit. Acting on that idea he had suggested that sanitary science should be a part of the teaching in all the schools throughout the Colonies. As a first step, he suggested that some elementary form of paper should be written and properly illustrated, a paper in which conclusions founded on facts were carefully and picturesquely laid out. Not, as one speaker had suggested, by a policy of dogmatic teaching. He considered that the teachers should themselves be primarily taught by Medical Officers of Health. In this way he thought that the Chinese, Negroes, and Indians, might be educated so that they would become willing to accept hygienic measures. He thought that in teaching hygiene they got quite as good an opportunity for the education of the mind as in the teaching of Latin or Greek, or any similar subject. By the observation of nature, by teaching the child to see and reason and remember, it might be educated quite as well as by teaching Cæsar's Commentaries, and the knowledge was infinitely more useful. As regards the tropics, there were so many object lessons that could be applied in the teaching of hygiene. For instance, let them show the child that a mosquito bite is as dangerous as a tiger's bite. He believed in teaching, not by dogmatism, because it always tended to provoke a contradiction. He considered that "Thou shalt not steal" rather stimulated a thief to do so.

Dr. Kerr, Medical Officer of the Education Department, London County Council, said that they had such a very artificial life that if they took the trouble to teach children reading, writing and arithmetic, they ought also to teach them the methods and conditions under which they lived. There was no doubt whatever about the general ignorance of these hygienic conditions. Dr. Heron had already spoken of it in connection with doctors and physicians who ought to know much better. In school teachers he thought the knowledge was equally rare. At the last examination of physical work in the London School Board, the question was asked, " How much air is taken in at each breath ? " The answers were given in square inches, in cubic inches, and in feet. They varied from ·6 cubic inches up to 6,000 cubic feet. These figures, he thought, illustrated the ideas which the teachers had of what had been taught to them. Another serious matter was the question of the conditions existing amongst the public schools of England, which he characterized as a disgrace. There were dirty schools, and some of them were getting the highest grants, yet no attention was paid to their disgraceful condition. That very day they had been trying to make a beginning in the cleanliness of the people, and they had at length got the necessary machinery to work with. In future parents must either clean their children's heads, or they will have to go to the Police Court and be fined a sovereign. That morning he had received a letter from the head mistress of a school, describing the verminous condition of the place, and asking if it could be disinfected by washing. That was the condition of a school under the London County Council. There was no doubt that the way to remedy this was to teach the children. The question of teaching was a difficult matter. They must put medical men out of consideration as teachers. He agreed that the ultimate teaching must be derived from medical men, but the medical man as a medical man was not a good teacher. If they were to teach the children, they must have the teachers taught, and to ensure that they must so arrange matters that the teachers entered into the subject *con amore*. There was only one way in which teachers would make themselves fit for the inculcation of sanitary science, and that was by carrying it out in their everyday work. The school should be examined and reported upon as a sanitary school. The inspectors should know what a sanitary school was. At present they knew practically nothing about it. For the younger teachers they must have hygiene as part of their certificate. If necessary, other things should be displaced to make room for it. For instance, they might drop French. The head of a school should be a person of such a capacity that at the age of thirty she should have qualified for a first rank teacher, while all the others who had been toiling away for certificates should be put on one side. As to the teaching of children, they could not teach those under twelve unless they dogmatized. The younger the child the more dogmatic they must be. They must say something will happen if they do this or that. The child must be taught to live properly. It must pass its life, physically at least, in healthy surroundings. That very day they had had to stop a teacher from going up for an examination because she was too dirty. One could not help being impressed in some cases by their slatternly ways, their dirty rags of dresses, and he had often thought that it would be a good thing if a proper uniform were worn.

Dr. Henry Armstrong commended the practice of the Society in inviting other opinions than those of the members. He considered it an eminently desirable practice and of great utility. He personally had listened with much pleasure to the excellent speeches that had been made. At the same time he must confess that if he had allowed all the views that had been expressed to weigh with him, he would have been in a delightful state of chaos. For instance, one speaker said that dogmatism was a desirable thing, while another said it was not. Then, in the next instant they were told that it was not desirable to teach children reading, writing or arithmetic, but they must be taught hygiene. He had not yet heard any one suggest that the children with whom they were going to reason should be consulted in these matters. It seemed to him that they had a notion that education was going to govern the world. In his opinion some of these children at least were over-educated already. If they were to give them a little fresh air before they began to cram them it would be better. If they kept them from school till they were seven years of age it would be better still. A few minutes previously a speaker had quoted Mr. Squeers, and it had set him thinking of Sir Thomas More's *Utopia*, and he could not help saying that he did not think they would get hygiene until they got Utopia. He would also remind them that Dickens, who had been quoted by one of the speakers, had referred to a lady, a Mrs. Pardiggle, he thought, who introduced her children in some such words as these: "Alfred, my youngest (five), has voluntarily enrolled himself in the Infant Bonds of Joy, and is pledged never, through life, to use tobacco in any form." The same author also remarks that such dissatisfied children had never been seen. He confessed that he failed to see the point of the whole of Dr. Newsholme's remarks, and he did not think that he had established anything favourable. He was, however, much amused at some of his stories, which had put him in mind of some examination papers he had had before him. One candidate stated that "tuberculosis was a disease occurring in an emancipated cow." He considered they were rather apt to lose sight of the meaning of education. The great evil of the day was to cram instead of teach. At the same time he did think that the remarks made about inspecting the heads of the children were very pregnant. The speaker referred to the outside of their heads. He would remind them that the teachers had to do with the inside, and in asking the teachers to look after both the inside and the outside, he thought they were expecting too much.

Dr. Herbert McLeod said he thought they were rather uncertain as to the method of teaching. He was of opinion that the best people to teach the teachers were medical men, and in this way the knowledge should be transferred to the children. He considered it would be a mistake for medical men to teach children. He had had some experience in teaching medical men. There were many lecturers appointed who were quite incapable of lecturing. A man might be a Senior Wrangler, but perfectly impossible as a teacher of mathematics. Therefore, if a medical man was going to teach, he must be able to transfer his information to his audience. To transfer it to young people they must peptonize their food. They must arouse the interest of their hearers. Dogmatism was one thing, and the faculty of assimilating was another. If they interested their audience they would find that they would assimilate this matter. In any case, if they were going to do so, they must choose their staff. Referring to the late London School Board, he said they were very much averse to the teaching of hygiene. The question first came up when they were discussing "first aid" at a meeting. He brought forward hygiene, and was told by the Chairman that first aid was the first thing and that hygiene was the last thing that they had thought of. He, the speaker, ventured the opinion that the first should be last and the last first. Later on hygiene was taken up and had been continued. In conclusion, he repeated that they should first pick their staff, and then he was convinced that excellent results would follow, otherwise the result would be unsatisfactory.

Dr. E. Walford drew attention to the fact that there were two local authorities in the United Kingdom that had already taken the matter in hand. He referred to the University of Wales, or rather the College of South Wales and Monmouthshire, which had already established a course of hygiene for the purposes primarily of school teachers. Both the Glamorgan County Council and the Cardiff Corporation had assisted by contributions towards the expenses of the course. The course had been started with a fair amount of success. The first lecture was attended by about a hundred students, and the course would continue through the whole of the University terms, and consist of thirty-six lectures. The idea was that a certificate in hygiene should be given at the end of the course, and the further expenses of those teachers who attend will be paid by the local authorities, provided they attain the certificate. It was thought better not to make the teachers experts in hygiene, but to interest them in the subject so that they should understand the object of the many sanitary appliances which they had at hand. The fee charged was £1 1s.

Dr. H. Meredith Richards said that he personally would find it very difficult to teach a child attending the elementary schools. He thought that the people they should first approach were the parliamentary representatives of the Board of Education, then there would be some hope of obtaining a curriculum for the training colleges. Dr. Walford, of Cardiff, showed that there was a solution of the difficulty to be had. He was afraid that if the Harley Street doctors could not apply hygiene to opening their own windows they would not teach children to do so. Unless they could make a child feel the importance of hygiene it would have no influence on its conduct. It seemed to him that if they talked of things like the black hole of Calcutta, of things children could understand, they might make them realize the importance of things in their own life.

Professor Kenwood said he desired to call attention to a matter that had been referred to by Dr. Heron in his paper. Dr. Heron referred to a meeting at Southampton of the Royal Sanitary Institute at which he read a paper. He wished to say that the Council of the Institute had taken action on the unanimous adoption of Dr. Heron's proposals at that meeting. The resolution was agreed to by the Council and sent to the Board of Education. Unfortunately that action did not appear to have been communicated to Dr. Heron. It seemed to him, the speaker, that the matter that called for criticism, was the suggestion that medical men should be appointed to teach scholars. The teaching must be done either by the school teachers or by medical men who have some knowledge of hygiene. The school teacher is not an expert in hygiene, and he did not think that the teacher was required to be one. The necessary matter could be put on two pages of foolscap. On the other hand, the medical man was not a teacher, and of the two he considered the latter to be by far the greater drawback. It was easier to teach the teacher hygiene than the doctor to teach. In connection with the evening continuation classes he had recently looked in at two classes unobserved, and he had been much struck by the inadequacy of the lectures in each case. The fact that the lecturers themselves had not the training nor the experience to teach was the obvious reason of the failure.

Dr. Musgrave Craven said that it was the intention of the Society that the masses shall learn hygiene. They did not want to teach the children, but to educate those whose duty it was to teach the children. Therefore they should put before the Board of Education the fact that it was the desire of the Society that hygiene shall be a compulsory subject for teachers.

Dr. Francis J. Allan said that what was wanted was not that they should teach hygiene by dogmatism, but by example. As an instance of his meaning he mentioned that some years ago Mr. Alexander, the Chief Inspector in Shoreditch, had tried to get proper closets with water appliances put in the schools there. At that time they were nearly all trough closets, and the inspector's idea was that if the children were taught to use the closets properly at school, they would do so properly at home instead of breaking them. He, the speaker, did not agree with Dr. Armstrong's criticism of Dr. Newsholme's stories. He considered that they pointed to the fact that the children had been taught incorrectly. He thought that perhaps Dr. Heron was a little hard on the West-end practitioners. He, Dr. Allan, was not there to defend them, but from what he had seen in the Marylebone papers they appeared to have some excuse for keeping their windows shut. He believed they would be only too glad to have their windows open, if it were not for the noise and dust.

Colonel A. M. Davies said that the War Office had realized the importance of teaching hygiene in the army. Although it was felt that it would be impossible to teach all the officers at home and abroad, they had to make a beginning with the young officer, the cadet at Woolwich and Sandhurst, where several courses of lectures had been given. They had been well received, and a great deal of interest had been taken in them. The men in the ranks were also being taught in regard to the cleanliness of the body, the use of the tooth brush, and so on. They were also beginning to teach the children. No order had actually been issued, but he, the speaker, knew that it would be done as soon as the matter could be managed. There would be short lectures on hygiene for the army teachers. He thought that the teaching should be by example and explaining the reasons for things. The most important point was that the teachers should have a love for the subject, and be able to excite the interest of those they were teaching. In this case some of the information would be certain to remain in the minds of their hearers.

Dr. Meredith advocated a system of district visiting in which the services of women and young girls who had been taught hygiene were enlisted. They went to the houses in their district, to tell the occupants matters connected with healthy living, and distributed leaflets dealing with various things. The system had been worked in a very practical way, and had been very successful. The leaflets were of a very practical description and interesting. He thought there was plenty of scope for hygienic work. Even at Oxford, in Christ Church for instance, he had found the ventilation atrocious, and it was equally as bad at some of the larger colleges. He desired also to support the remarks of Sir Patrick Manson, having himself lived many years in the tropics. He was glad to hear that there was a movement on foot to exterminate the mosquito.

The **President** (**Dr. J. F. J. Sykes**) said that the point he wished to lay emphasis upon was one referred to by most of the speakers, the kind of teaching that should be given. He called their attention to the series of articles on "Infantile Mortality" that had recently appeared in the *Times*. It had been pointed out in that journal that Infantile Mortality was as a matter of fact the result of the neglect of teaching hygiene. It was shown that owing to education, our girls no longer remained at home to tend the younger children, as was the custom of their forebears. They were packed off to school where their domestic economy knowledge had been supplanted by class knowledge and the system was very largely the cause of neglect of hygiene in the present generation, to which neglect was undoubtedly due the high rate of infantile mortality. He considered that what was required was to replace what had been lost. He had great pleasure in calling upon Dr. Heron to reply.

Dr. Heron, in reply, said that if at so late an hour he were to attempt to deal with every criticism of his paper, he would have to occupy their attention for a very unreasonably long time. He wished, however, to reply to Professor Kenwood, who had drawn attention to an apparent inaccuracy in that portion of his paper which referred to certain resolutions carried some years ago, at the Southampton meeting of what is now the Royal Sanitary Institute. He (the speaker) had said that he never heard that the Council of the Institute took any notice of that unanimous vote. Only that afternoon had he received a letter from Mr. Whitaker, who is Chairman of the Council of the Royal Sanitary Institute, drawing attention to the fact that certain action had been taken. He, Dr. Heron, had made the statement in his paper without having any knowledge of the action taken by the Sanitary Institute. Continuing, he remarked that in the first place much had been said that evening about methods of teaching. He himself had refrained from discussing any particular method of teaching. His object was a very simple one. He did not much care how it was accomplished, whether they decided to teach teachers or children, or teachers and children. What he wanted was the Incorporated Society of Medical Officers of Health to bring their section of the medical profession into sympathetic touch with the educational authorities of this country, and so initiate the intimate personal association of medical men with the teaching of hygiene in schools and universities, which he came there to advocate. He was sure that the Medical Officers of Health were the proper people to approach the Government, to offer to do what they could to help on the cause of school education in hygiene, and to help to get the matter put into shape and carried out. No one supposed doctors to be perfect teachers; but he was convinced that there were, so far as the teaching of hygiene was concerned, more incapable teachers amongst professional teachers than there were amongst professional men. He knew no persons more capable of teaching hygiene than doctors. He deemed it the duty of the medical profession to do what it could to help on this matter. No, doubt they would find some unsuitable teachers in the medical profession; but they could eliminate the unfit as opportunity offered. There had been a good deal said during the discussion about dogmatic teaching. For his own part he thought there was nothing worse in teaching the young than what was called a lecture. He said they had all suffered from the lecture. Take, for instance, the lecture on anatomy. What is the use of it to the student? The student either learnt anatomy in the dissecting room or not at all. Then, again, what was the use of a lecture on materia medica? Had any one ever got any good from it? He considered they should bring children face to face with facts in pictures, under the microscope, in the magic lantern, or in test tubes. A demonstration was what they wanted, not a lecture. Indeed, the teacher should get as far from a lecture as possible, but as near to the teaching of the laboratory as he could. That, in his opinion, was how children of all growths could best be taught. The notion of getting doctors to teach hygiene was suggested to him about twenty years ago, when he was working at bacteriology in a house in which were a few children, ranging in age from eight to fifteen years. They became interested in watching him at work. He showed them that diseases grew like plants; that each disease had its own seed; that it could not grow from anything else. He was surprised to find how quickly they realised all he told them, how interested in it they became, and, as they grew older, what a marked effect it had on their apprehension of the meaning of infection and of the prevention of disease.

As to school classes, if they were to teach effectually, they must have small classes, numbering about six or eight, so that each individual might be personally taught by the teacher, and all difficulties explained.

If he (Dr. Heron) understood Sir Henry Craik aright, Sir Henry had said there was no need to teach elementary hygiene to University students. Sir Henry said, in effect, that the subject could be sufficiently taught during school life. Dr. Heron was sure that if one thought about this view of the matter, he would arrive at the conclusion that the teaching of elementary hygiene would, if well done, have to be taught in universities as in schools. For instance, could school children be taught, with advantage, the real meaning and consequences of alcoholism? Dr. Heron thought few subjects were more worthy of being openly discussed before young men and women than that of drunkenness and its consequences; and this could nowhere be better done than in a University. Again, the young men of every country should have pointed out to them the evils that inevitably follow upon the degradation that is inseparable from a falling birth-rate in a healthy and prosperous community. This could best be done while teaching elementary hygiene in a University. Many and most important questions relating to the public health could not be touched in schools, which could in universities be taught with great advantage to the students. Miss Ravenhill, in an admirable speech, to which he had listened with very great interest, had reminded him that hygiene was a compulsory subject in American schools. He was under the impression that he had said that a much larger scheme was being considered in America.

In conclusion, he thanked them sincerely for the kind manner in which they had listened to and discussed his address that evening. His object had NOT been to discuss systems of teaching. He did not care what methods of teaching were adopted, provided the result was achieved. He did, however, want the Medical Officers of Health of this country to help the matter along by bringing pressure to bear on the authorities, and he felt that the medical profession was the only body which forthwith could initiate the teaching of hygiene in this country with greatest advantage to all concerned.

DR. ARTHUR NEWSHOLME moved that the Council of the Society be asked to form a committee of members of the Society, together with Sir Patrick Manson, Miss Ravenhill, Dr. Heron and Dr. Kerr, to consider how best the teaching of hygiene in schools, and particularly the teaching of hygiene to teachers, can be promoted.

DR. ARNOLD EVANS seconded the motion.

DR. JOSEPH GROVES, in supporting the motion, said that this Society was the first to make strong representations to the Board of Education on the matter. The Board were in favour of it, but did not know how to go to work about it, as they had no books and no one to teach. He thought the appointment of such a Committee was an admirable way to deal with the matter.

The President having put the motion to the meeting, it was carried unanimously.

Dr. Seaton proposed a vote of thanks to Dr. Heron for the exceedingly interesting and important contribution to the transactions of the Society. At the present day, he said, nothing could be more interesting to them than school hygiene. It was not the first time that they had been indebted to Dr. Heron, for nearly twenty years ago he had given them a paper on cholera. He, the speaker, thought they should express their great indebtedness to Dr. Heron for having introduced the subject of hygiene that evening, and for the able manner in which he had dealt with it.

Dr. H. Armstrong having seconded the motion, it was carried by acclamation.

Professor Robert Koch is to be the recipient of the Nobel Prize in medicine this year.

Enteric Fever and Ice Creams.—Dr. Barras, Medical Officer of Health for Govan, reports that during September a sudden and sharp outbreak of enteric fever sprung up, the majority of the cases being directly and conclusively traced to the consumption of ice cream, and no fewer than twenty cases were due to this source, including the maker and vendor of the article who for two weeks was attending his business with the disease upon him.

Smallpox and Tramps.—Smallpox was brought into the county of Derby during 1903 some forty times by tramps. The term "tramp" in this connection includes a fair proportion of decent labourers, such as navvies, a larger proportion of inferior labourers, who either have not sufficient strength of mind or are physically too weak to keep work when they get it, and a still larger proportion, quite half of the whole, who are habitual "won't works" wandering from workhouse to workhouse. That legislation is necessary to deal with the tramp problem is now admitted, and the Departmental Committee appointed by the Local Government Board is the first step towards solving this problem. All three clases of tramps must be legislated for. Labour bureaus worked by the police of the counties and county boroughs should be provided, so that a labourer need not walk from one end of England to the other on the chance of getting work. A man who has been in constant employment for a certain length of time, and who has to travel to get work, should be able to obtain a railway pass, or at any rate a decent bed at a police station on producing a certificate from the police of the district in which he was in regular employment. In this class, tramping about the country at the present time are a large number of army reserves. To keep a steady man of this class, who is travelling in search of work, two nights in the casual wards, and impose upon him the task of breaking stone in a dusty atmosphere, is unscientific and futile, and much greater discretionary power should be put in the hands of the workhouse masters. Any scheme should deal with all classes of tramps: (1) Labourers travelling after work; (2) Inefficients and weaklings; (3) Habitual "won't works"; (4) Women and children. It will not be sufficient to deal merely with the workhouse casuals; the common lodging-houses harbour an even larger number of undesirables. Something ought to be done to improve the condition of these places, either by some social movement or by the authorities themselves erecting lodging houses under the Housing of the Working Classes Act.—Sidney Barwise, *Ann. Rept.*

MEDICAL INSPECTION IN DAY SCHOOLS.*

By JAMES B. WILKINSON, M.D., C.M., D.P.H., F.C S.,
Medical Officer of Health for Oldham; President of the North-Western Branch of the Incorporated Society of Medical Officers of Health.

GENTLEMEN,—My first duty is, to tender you my sincere thanks for the honour you have accorded me in placing me in the Presidential Chair for the ensuing twelve months.

In looking back even the few years, in which it has been my fortune to be a member of the Society, one cannot help noticing the distinguished men who have preceded me in this position. It is not necessary to refer to dead heroes, whose very death often throws a glamour over their life's work, but rather to the pioneers in Public Health work who are *still* living and who are *still*, day by day, advancing our knowledge in this branch of medical science, and by their work conferring benefits upon thousands of their fellow men.

I need only mention such past Presidents as Tatham, Vacher, Niven, Paget, Robertson and Sargeant to prove that some of the best Public Health work in the country has been performed by former occupants of the Presidential Chair of this branch of our Society. And the work that our distinguished member, Professor Delepine, is now carrying out, in increasing our knowledge and powers of investigation, renders this branch one of the most important divisions in the country.

Though it is not in my power to emulate those who have preceded me, I believe that the papers and discussions at our meetings during the year will be of great interest and practical value in our daily warfare against insanitary conditions and disease.

I am sure that some of my predecessors, at least, have felt that the necessity for the delivery of a Presidential Address detracted somewhat from the pleasure which they experienced in occupying the position. To those members of any society, who have found an outlet for their ability in some original work, some new discovery, or some new successful departure from the ordinary methods of procedure, a presidential address is a fitting opportunity for presenting their knowledge or experience to the world, and thus make their year of office a memorable one in the history of the society to which they belong; but to those who, fully occupied by the daily routine of work, have little time for original work or thought, the presidential address too often becomes an exposition of private fads and opinions, which the time-honoured custom of prohibiting discussion on the president's address, allows to remain uncorrected and a misleading example, and to avoid this I have endeavoured to make my remarks of a general nature only, and on a subject on which we must all take a deep interest.

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* Presidential Address, October 28, 1904.

The subject, on which I have ventured to address you to-day, will not be the least important of the matters we shall have before us during the session, and the knowledge that at least two papers will touch upon the same topic, has led me to shorten and generalise my observations, for which I have no doubt you will all feel profoundly thankful.

The recent amalgamation of two executive authorities—the Health or Sanitary Authority and the Educational Authority—for though the acting body is more or less composed of different persons, the ruling authority is the same in both cases, *viz.* the Council, be it County or Borough, suggests a few remarks on the relation of the two authorities in advancing the general health and well-being of the people, especially of the rising generation, and in rendering the conditions under which education is carried on better than in many instances they have been under the old regime. It seems to me that the higher aims of both the Health and Educational Authorities are very similar, though working from a different standpoint.

The Health Authority endeavours to place the body in the best sanitary surroundings, give it pure air, pure water, food sound and nourishing, healthy homes to live in, to remove as far as possible the detrimental conditions consequent upon living in crowded communities, and by these measures to ward off diseases, as far as it is possible to do so, with the object of enabling it to perform its alloted tasks to the best advantage, and by lengthened life to promote the wealth of the individual and of the general community.

The aim of the Educational Authority is practically the same, and through the training of the mind endeavours (or rather should endeavour, for I doubt myself whether some educational methods are undertaken with this view at all) to enable the possessor to make the best use of its powers, whether they are great or small, both for his own benefit and that of the world at large.

It is undoubtedly true that notable examples have occurred where a master mind has been enshrined in a feeble or deformed frame, and where the very feebleness of the body seemed to act as a greater stimulus to the mental energies, resulting in great literary or scientific attainment; but, I think, there is no gainsaying that the man who possesses "a sound mind in a sound body" is the one who is, as a rule, most likely to be a benefit to himself and a credit to his fellow creatures. The ideal school regime should be one which keeps in view the necessity for the development of the body at the same time as the training of the mind, and it should be officially realized that a strain of one without a corresponding bracing of the other may in many cases lead to disastrous results.

In the great majority of our ordinary day schools, to which my remarks refer, attention has been paid to one side only. Hitherto, except in a very few instances, the various school authorities have considered that it was only necessary to appoint officers to secure attendance of the children at school. The question seldom was considered whether a child was *fit* to attend school; it *must* attend unless it was certified as unfit. Attendance officers were appointed, whose duty it is to secure as large an attendance as possible, and later medical officers to School Boards were appointed whose duty, as far as the children are concerned, is chiefly to examine those children who are alleged to be " unfit " and see that this description is correct, and if only partially so, to report to what extent the education of the child can be proceeded with.

The result of this has, in many cases, been successful in securing a certain amount of training for mentally or physically deficient children, but now that the Educational body and the Health Authority are one, I suggest the time has arrived when medical examination of the scholars in our public schools should be carried further, and instead of being directed only towards securing as large an attendance as possible, should be directed also towards preventing, partially or entirely, those children from attending school who are by their attendance either injuring their own health or are causing detriment to their fellow pupils.

As a general rule, very little has been done in this country towards such a purpose, though in many places on the continent and in America such arrangements are not infrequent. On the contrary, not infrequently the strongest opposition to any such endeavour has been evinced, as, for example, when school closure has been ordered with this result in view.

In the prevention of those children attending school who are injurious to others, a partial attempt has already been made. The Educational Code contains certain directions respecting children suffering from infectious disease, and the Public Health Act confers certain powers on the Health Authority respecting the same; and Medical Officers of Health throughout the country have availed themselves of these powers to check the extension of the various diseases of this class. When scarlet fever, smallpox, diphtheria, etc., invades a household, the school children are invariably excluded from school, and in many districts the minor infectious diseases of measles, whooping cough, etc., are reported to the Health Authority, and exclusion from the schools of the affected ones and their contacts are also arranged for.

When certain of these diseases indicate a particular school as the source of the infection, a personal examination of the scholars is frequently also undertaken, and in the case of scarlet fever, especially, often with a very satisfactory result; but the continued and extending presence of diphtheria in our schools renders it necessary that a more accurate examination of the scholars in the schools, where it makes its appearance, should be undertaken, and nothing less than a systematic bacteriological examination of the throats of children in one class or classroom is necessary if this disease is to be successfully combatted.

In the case of children suffering from tuberculous disease, nothing has yet been done towards isolating them in the schools, except when the disease is fairly advanced and the child too ill to attend school.

Our knowledge of the methods children adopt in the interchange of various articles they possess during school hours indicates very strongly how easily the seeds of this disease may be first implanted by a tuberculous schoolmate.

That skin disease is often also introduced into a family by a child attending a day school is too well known to require remark.

To many members of the Educational Authorities, the suggestion that measures should be taken by them to exclude children from school, who are injuring their own health, my experience tells me will be very heterodox. That, we are too often told, is the duty of the parent, and perhaps it is, but I would suggest it is also the duty of the public authority. If the State insists, as it does, that every child must attend school unless physically unfit, it is the State's duty also to take care that the education is carried out under proper conditions, and that the amount of study is such that the child can individually bear without detriment to its bodily welfare.

When a class consists of children who come from homes, in some of which they are well cared for, while in others, not only are the home conditions most unsatisfactory, but food is often deficient as well, the mental and bodily stamina must vary very considerably indeed.

A systematic inspection of the children in our public schools will, as the evidence of the few instances where it has been undertaken conclusively proves, bring to light many children who, while attending school, are suffering from illness which is steadily undermining their strength, and tending to induce in them a crippled condition, or even land them in a premature grave.

The casual inspection of a school class while they are at work, and while they are undergoing those physical exercises which form part of the school curriculum, will enable the trained observer to pick out cases of chest disease, heart disease, anæmia, etc., of which the parents of the child must often have no conception.

Scrofulous glands, commencing hip-joint disease and spinal disease, are other conditions, which the detection in the earliest stages is of the utmost importance to the future welfare of the individual. I need not mention cases of defective eyesight and hearing, and cases of defective mental conditions, because measures are already taken to remedy these defects, except to add them to the list of conditions which the detection in the earliest stages is of importance.

Between the really mentally defective children and those whose mental condition is of a normal character, are a large number of children of a dull and listless manner, slow to take in the facts presented to them, and generally the dunces in a class.

In the schools in the poorer districts of our towns, this class of children will be found much more frequently than in the more well-to-do districts, and it will be found, I think, when the conditions of these children are enquired into, that the cause, in many instances, of their apparent low mental vitality is to be found in their home environment. Except where the teacher has traced these children to their homes, and in the two or three towns where regular systematic examination of school children has been instituted, the valuable information which this class of children would bring to the Health Authority of crowded homes, dirty houses, and insanitary surroundings, is entirely lost.

By following these children to their homes and investigating their surroundings, it would be found that in many cases the sleeping accommodation was overcrowded, or perhaps no proper sleeping accommodation at all; the ventilation of the bedrooms would be only noticeable by its absence; perhaps a slight leakage from the gas bracket would be found in addition. Often the sanitary arrangements would be found defective, and in other cases a diet entirely unsuitable or deficient in quantity would be discovered.

What wonder that a child kept up to late hours at night, assisting often in some work, or one partially poisoned by crowded rooms or sewer gas, is heavy, drowsy or stupid when it arrives at school, and too often becomes classed as one of dull or feeble intellect.

I am convinced that if such cases could be followed up by persons properly trained to examine for unsatisfactory household conditions, a most valuable work would be done in house sanitation and in ameliorating the conditions, hygienic and otherwise, under which many of our school children exist. A large proportion of the children from these houses are frequent absentees from school, either through ill health or carelessness, and require to be visited by the school attendance officer. It would be interesting, and I think satisfactory from a Health point of view, to try the effect of substituting for the Attendance Officer a well trained and qualified lady Health Visitor or Sanitary Inspector. My impression is that by improving the household conditions, not only would the children be better able to absorb the school instruction, but that a much larger number of attendances would be obtained. Of course, to secure this, the visitor must be supported by the Health Authority, to secure the necessary sanitary improvement of the dwellings and their arrangement.

The science, if I may term it so, of School Hygiene is of such recent development that we are hardly yet able to define its limits. It begins with the buildings and arrangements of the schools themselves, it will end possibly in the future with the personal examination of every pupil in the schools. At present it certainly includes within its scope the examination of all school buildings with a view to rendering them thoroughly healthy, well ventilated, and free from insanitary conditions; it also should extend to such examination of the inmates as will ensure the detection of those scholars who are suffering from disease of the more characteristic types, who by their attendance are injuring themselves or in danger of conveying the disease to others. At present my experience is that, in most instances, it has not extended far enough in practice to ensure that the schools themselves are in a satisfactory condition.

That the person who is to carry out the various duties of ensuring that the education of the rising generation is going on under the best conditions in regard to health and physical development must be a medical man is, I think, universally conceded, but the question as to his special training is by no means so easily decided.

Naturally, as a Medical Officer, I am of opinion that one who has devoted himself more especially to sanitary matters would carry out the majority of the duties to the best advantage, but on the other hand, in the problems in connection with the mentally deficient, and in the detection of the various bodily ailments, the experience of the general practitioner or specialist would be most valuable; and in eye and ear cases the majority of medical officers would not be the best advisers. In other words, if one medical man is to carry out all the duties which should be undertaken in respect to school hygiene, he must not only be a thoroughly qualified sanitarian, fully cognisant with the necessary arrangements for air space, ventilation, lighting and drainage, and an expert in reference to infectious disease, but he should be also a specialist as regards children's and mental diseases, an oculist, and an aural surgeon—a fairly extensive list of attainments —and the practitioner who could show them all, would, I think, require a higher remuneration than most public authorities would be prepared to give.

Moreover, without the assistance of the Health Authority, a very large proportion of the work, which might and should be carried out by the Educational Authority, would be considerably delayed and curtailed. The knowledge of the prevalence of the notifiable diseases would only come in the first instance through the Health Authority; the source of its origin, the direction of its spread, and the various contacts, *could* only come from the Health Authority. The following up of the minor cases of disease, the examination of the homes and the removal of the unsatisfactory conditions discovered, must be through the same channel. The School Authority lacks the necessary trained staff to examine into drainage and other defective conditions both at the schools and at private houses; the assistance of the bacteriological laboratory, where one has been established, and the various house histories, would also not be available.

In various counties, in various boroughs, in various districts, the methods adopted must necessarily be arranged somewhat differently; but I suggest that the general plan should be one in which the Medical Officer of Health and his staff, the special officers of the Educational Department, and the Teachers of the schools, would each have their own duties in promoting the health and well-being of the children.

The Health Authority, and, acting as their chief official, the Medical Officer of Health, have the executive power. In connection with infectious disease the schools can be closed, and certain children excluded. The schools can be entered and examined, and defective sanitary conditions remedied. They have the necessary staff and authority to follow up infectious disease into the homes, and the first authentic knowledge of these diseases comes to this department. The removal of insanitary conditions which, as I have already mentioned, often have a very considerable effect upon the education of the children, can be remedied by their endeavours, and the regular examination for defective sanitary conditions on school premises can be undertaken by the sanitary staff.

For these and other reasons the Medical Officer of Health should be, in my opinion, the chief directing officer of medical inspection of the Educational Authority. Not only do his present duties lead him in that direction, but many of the duties which are necessary to be undertaken in a systematic inspection are already performed by him. His duties would be to direct investigation and examination, or to undertake it himself, in those schools or districts where examination seems advisable, with a view to detecting unrecognised cases of infectious disease; to indicate the districts from which children whose environment would interfere with their well-being might be expected. To thoroughly examine the sanitary arrangements of schools, and to follow to their homes those who by their association or conditions were likely to be spreading disease, or who themselves indicated that they were suffering from unsatisfactory conditions at home. In smaller districts he would be able to undertake a considerable amount or the whole of the personal inspection of the children himself, referring the special cases to an expert or specialist of the various branches of medical science.

In the counties, except in the smaller ones composed almost entirely of rural districts, it would of course be absolutely impossible for the M.O.H. to undertake much, if any, personal inspection, and it would be necessary to delegate those duties to medical men living in the various districts, and in most cases to the Health Officers for those districts.

In the large towns and county boroughs, where there is to be found the greatest prevalence of deteriorating conditions among the children, as well as the greatest tendency to the spread of disease, the Medical Officer of Health will generally be also fully occupied; but here, unlike the county, he will be in very close connection with the district, and in consequence be much better able to undertake the school inspection, personally or by deputy; for unless the personal examination of every scholar is to be regularly undertaken, for which the time in this country is not yet ripe, much time will be lost in making general inspections and examinations without the assistance and information he and his staff are able to give.

For an expert opinion on defective children, it would in most instances be preferable to pass them on to the specialist or to a medical man specially appointed for this purpose, the Medical Officer retaining solely the general examinations.

There is no doubt that the teachers have already quite enough to do, and I have the strongest objection to making them into medical inspectors, but still they would play an important part in the system of general inspection. With very little training it is perfectly easy for them to detect certain conditions which they could report to the medical inspector. They already, in many cases, report minor infectious diseases, and but for the fear of diminishing attendances would often report more cases than they do. Such appearances as enlarged neck glands, sore throat, hoarseness, sore noses, skin disease, breathlessness, blueness, etc., are all conditions which they must notice and could easily report, if it was made their duty to do so, and if there was any one to examine them when reported. The dull, sleepy, dirty and uncared-for children they know only too well, as well as those who are deaf or shortsighted. The diagnosis of the cause of these conditions is not for them, but simply to notice them and enter them in the inspection book, when their duty would cease. The recording of the weight and height of each child, say once or twice a year, would give valuable information as to its development. This would take little time, and the recording would in all probability be both pleasureable and instructive for the children.

I have already indicated another class of officer who, if properly trained and under proper direction, could give valuable assistance in advancing the healthy environment of the children, and in the detection of disease. The usual procedure, if a child stays away from school, is that the teacher reports to the attendance officer, the officer visits the child's home and finds out the cause of absence, and then reports back to the school or Board. If an infectious disease is the cause of absence, it is sometimes reported to the Health Authority, who then send another inspector to examine the house and take any measures that are necessary.

My information is that by far the largest proportion of cases necessitating a visit of the School Attendance Officer is due to illness, and if he was trained as a sanitary inspector, and acted under the direction of the Health Department, a vast amount of walking about would be saved, promptness of action secured where necessary, and a considerable number of improved household conditions obtained. For refractory cases a special officer could be retained; but the removal of defective modes of living, and the prompt isolation of infectious cases, would, I am convinced, secure less frequent absences from school, to say nothing of the effect on the health of the children. Many cases of dirty, overcrowded houses, leaking gas jets, improper feeding, cases of phthisis and other illnesses, would be discovered by the trained official.

That the Medical Officer of Health as at present engaged would be unable to carry out this work is assured, but the direction and organisation should be in his hands; the actual procedure varying, and the alterations made in his duties, and the assistance given him, being different in almost every district.

Counties now without a Medical Officer of Health should appoint one.

The Medical Officers of large boroughs could be given one or more assistants.

In smaller boroughs, the appointment of sole time officers instead of partially employed ones. A resident to the local hospital might be appointed, and act as Assistant Medical Officer. The formation of smaller districts into combined areas, and the appointment of a sole time Medical Officer, are some of the measures by which school inspection could be undertaken. It would cost something of course, but money spent in checking the physical deterioration of our future men and women, and thus rendering them better able to take their place in the world, would be well spent, and in the future repay itself.

One other method by which the Educational Authority can improve the health of the country, is certainly their especial duty, *viz.*, the education of those under their control in those hygienic truths which every man or woman should know. They should begin with the teachers, and insist that their training should ensure a knowledge of the ordinary principles necessary to secure them healthy surroundings; a general idea of the nature of infectious disease and the manner of its spread; the necessity for free ventilation and how to secure it; the harmfulness of insanitary conditions and the evils which pertain to them. At the present time I fear the most widespread ignorance exists in sanitary matters among those who have the teaching of our day-school children. Instruction of the older children in the general details of sanitary and insanitary domestic conditions, and, of the girls especially, in the feeding and management of infants, and even to the younger children, there are many facts of hygienic importance, which may be indelibly printed on their young and receptive minds. In the evening schools, if more popularly and less scientifically treated than at present, lectures both for boys and girls will be much appreciated and of great benefit.

Gentlemen, you have listened long and patiently to these fragmentary remarks, which I am sure many of you could have more ably delivered than I have done, and perhaps you are thinking that besides the drawback of having to give a presidential address, there is the drawback of having to listen to one. I am sure you all agree that medical inspection of the children in our day schools is necessary, and where undertaken will be entirely beneficial. You will doubtless differ as to the extent to which the examination should proceed and the machinery by which it can be best carried out. When attention is drawn to the fact that something like 35,000 children die each year in this country during school age, and that about 20,000 of these deaths are due to either infective diseases or to conditions having a close relation to school life, it will be seen that the opportunity for a great saving of life is ample, and if to the above numbers could be added the deaths of younger children to whom disease has been carried from school, the numbers would be enormously increased. One disease more than any other needs special examination of children at school, and that is diphtheria, which, in spite of the advance of sanitation and the reduction of the death percentage by the use of antitoxin, still claims as large a share of the total deaths as it used to do. Out of about 8,000 deaths from this disease over 5,000 occur in school age.

Chorea is a cause of death almost entirely during school life, and tubercular diseases claim a very large number of deaths during this period; and besides those who actually die, there is an enormous number of persons whose health has been deteriorated or whose body or mental capacity has been crippled by conditions which, if they had been detected in school life, could easily have been remedied.

Ample illustration is afforded by these few figures, and a much larger number of statistics could be adduced; but I think you will agree that the present is an opportune time for the various Educational and Health Authorities throughout the country to make a combined effort and initiate work which will benefit our children considerably—mentally, physically and morally—and that those who neglect to avail themselves of the opportunity incur a heavy responsibility, and lay up for themselves a punishment in the way of physical and mental deterioration of our future citizens.

DISCUSSION.

Dr. Vacher (Cheshire), in proposing a vote of thanks to Dr. Wilkinson for his able and lucid address, stated that nowadays Sanitary and Educational Authorities were drawn closer together, and as a result of that the hygienic Utopia sketched out by the President was bound to come soon. To his mind, one of the greatest problems in school hygiene was to ensure the proper feeding of school children. The greatest difficulty in the way of this matter was the fact that it would probably put a premium on the negligence of certain parents. The diphtheria figures given by Dr. Wilkinson were very striking, and one would have thought that the antitoxin treatment would have modified them very much more. They showed that, in spite of our numerous efforts, there was still great room for reform. He moved that the best thanks of the meeting be given to Dr. Wilkinson for his excellent address.

Dr. W. Berry, J.P. (Wigan), complimented Dr. Wilkinson on his paper, and heartily seconded the vote of thanks proposed by Dr. Vacher. The address convinced him more than ever that the Educational Medical Officer should be the Medical Officer of Health, or should be under his immediate direction.

Dr. Garstang, in supporting the vote of thanks, said that those who were in advance of their times did the best work, and on that account he thought Dr. Wilkinson's address gave a happy augury of the results to be anticipated from his Presidency.

The vote of thanks, on being put to the meeting, was carried unanimously. **Dr. Wilkinson** in his reply thanked the branch for their patient hearing, and stated that his address had been prepared under circumstances of great difficulty, namely under the stress of a smallpox outbreak. He had been afraid of introducing the subject of the feeding of school children because of the immense difficulties surrounding any scheme to that end.

NEW RULES FOR DIPHTHERIA QUARANTINE.—The Iowa State Board of Health has promulgated the following rules regarding the quarantine limit after diphtheria :—

Quarantine shall be released in those houses in which diphtheria has been diagnosed when synchronous cultures taken from the noses and throats of all infected persons quarantined show two consecutive negative examinations, providing the regulation of the Board regarding disinfection and fumigation have first been complied with.

Those who have been quarantined with diphtheria patients may be released from quarantine when both nose and throat cultures, on examination of bacteriologist of the State Board of Health, do not show the presence of diphtheria bacilli.

In districts where it is not possible or desired to use the laboratory findings as a means of regulating quarantine, those suffering from diphtheria shall be quarantined for a period of not less than four weeks for initial symptoms where antitoxin is used, and five weeks where antitoxin is not used.

THE PREVENTION OF CONSUMPTION.—The following letter has been sent by the National Association for the Prevention of Consumption to the leading steamship companies: "We are directed by the Council of the National Association for the Prevention of Consumption to write to managers of steamship companies engaged in the carriage of passengers, and invite their attention to the great danger of the spread of the infection of tuberculosis from diseased persons to the healthy on board ship. The points to which the council, in the interest of steamship companies themselves, as well as the health of the public, more particularly desire to invite attention are: (1) The danger to healthy persons who are placed in cabins shared by consumptives; (2) the want of any administrative measure calculated to discover the existence of the disease amongst the passengers before the vessel departs from port; (3) the necessity of effective disinfection of bunks occupied by consumptives at the end of the voyage. The Council are mindful of the difficulties which the steamship companies have to contend with. Persons suffering from consumption may have to make voyages, and phthisical patients are often sent by medical men to Africa, Australia, New Zealand, America, the West Indies, and elsewhere. The companies cannot demand a certificate of health from every passenger, and have no means of ascertaining who among them are suffering from consumption before they are admitted on board. The Council would, however, suggest that a notification might be issued requiring that information should be given of cases of advanced consumption. They would further suggest that the steamship companies should in their contracts with passengers reserve power to remove consumptives from cabins in which they are a source of danger or disturbance, and separate them from healthy persons, special accommodation being provided for the segregation of such sufferers. . . ."

THE MUNICIPAL TREATMENT OF PHYSICAL DETERIORATION.*

By COUNCILLOR W. F. DEARDEN, M.R.C.S., D.P.H., J.P., Manchester.

THE subject of physical deterioration is getting somewhat threadbare by now, and it therefore needs a certain amount of hardihood on my part to resurrect it even to a small degree. The Privy Council's Committee has published its Report, and one might, in consequence, be excused in taking it for granted that all has been said in the matter which required to be said, and that nothing should remain but the carrying out of the suggestions for treatment.

There is one aspect of the problem, however, which, in my opinion, has not been accorded sufficient prominence. The Report deals very extensively with what municipalities have not done and with what they ought to do, but does not, to my mind, give sufficient credit to these bodies for what they have done towards abolishing the causes tending to deterioration. I would point out that there is little that is new in this subject to medical officers of health or the leaders of local self government. The factors creating this condition are well understood and, owing to the action taken towards obtaining their amelioration, a well marked and steady improvement has been becoming more and more apparent as time has gone on. Year by year Corporations are obtaining more advanced powers to deal with evils requiring control, efficiency in administration is increasing, improvements are, therefore, becoming greater in number, more drastic, and more rapidly carried out.

The popular view that the existence of this condition has only just been completely brought to light is easily understood. For a subject to "catch on" with the public it requires advertisement, and, in this instance, nothing in the direction indicated struck the press as likely to be attractive to the populace until a study of the lessons of the South African campaign took the vacant place of war news in their columns. The large demand for troops during the war naturally directed subsequent attention to the sources of supply, and leader writers had a clear field for comment when they got possession of some recruiting statistics. The figures they published did not look very well in print, but very much the reverse. It is not very satisfactory to find, after the preliminary thinning out by the recruiting officers, that the medical examiners, with a comparatively easy standard of requirements, should be compelled to reject 35 per cent of the remainder. A study of the average physique and stamina of those accepted does not appear to mend matters very much, the army medical returns for 1899 and 1900 showing that the average recruit at 20 years of age is two inches shorter, one inch narrower in chest, and fifteen pounds lighter than the average youth of 17 years. In addition, Major-General Sir Frederick Maurice appears to have vouched for the fact that only two out of every five seeking enlistment are ever fit for active service. Blucher's expression during the Waterloo campaign concerning the British cavalry and artillery, to the effect that he had not given the world credit for containing so many fine men, would scarcely be applicable to present day form.

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* Read at Meeting of the North-Western Branch of the Society of Medical Officers of Health at Manchester, November 18, 1904.

These facts which have so much startled the public are, however, not very difficult to understand or to explain. During the time of Wellington the majority of the people were country born and bred, but now the exact reverse of this is the case. With our voluntary army system it is not the well-to-do man or the skilled artisan that seeks enlistment; the ranks are filled from the unskilled labour class. The recruit therefore, who had formerly been accustomed to open-air work accompanied with common but good and suitable food, has changed his habitation, and along with it the conditions under which he has been reared. Tommy Atkins is now, therefore, a town-bred youth and comes from the poorest section of the community; his average surroundings are bad, and so is his bodily development in consequence. It cannot then be said that statistics of the style of those quoted show proof of the deterioration of the race; they simply apply to a class, and such a class as exists under the worst possible conditions as regards environment. These conditions are known, and it is recognized that the solution of the problem can be brought about by the removal of the individual from his surroundings, or the surroundings from the individual.

As Manchester has been pretty freely used as an example of a city with a physically deteriorated population, and was rather severely handled in committee, it will be a very proper proceeding for me, in showing the work accomplished by municipalities to counteract the evil, to draw upon it as freely as possible for my illustrations.

Before proceeding to particularize I would point out that the class of surroundings which produce an inferior development is exactly the same as that which creates a high death-rate, so that if the people of Manchester are deteriorating, the death-rate should have been on the upward grade for many years past. Furthermore, in this city, as in others, there has always been a gradual movement going on among the better classes to get further and further away from the centre of the city; this meaning that the original borough area is now inhabited by the very poor, and that the mansions of the early Manchester merchants are now crowded out with an insanitary population. Instead, however, of having an enormously increased death-rate since the incorporation in 1838, such as these factors point to, the exact opposite has obtained, there having been a steady decline during the whole of the period alluded to. Taking the original area all through, during the period 1838–40 we had a rate of 35·8, in 1841–50 it was 33·3, in 1851–60 it was 31·6, whilst in the period 1891-1900 we find it 29·6 only, and everything points to a further diminution during the present decennial period.

I think it may be generally admitted that poverty, overcrowding, unwholesome food and badly-regulated dietries, alcoholism, filth, and a lamentable ignorance of personal and general hygienic principles among poor people are mainly responsible for their inferior physique.

Poverty is a very bad surrounding, and is always more or less associated with all the others. Unskilled labour is not protected by trade societies, and therefore brings very little in at the best of times; and at the best, the supply being greater than the demand, the work to be got hold of is very irregular. The wife has to work as well as the husband if the wolf is to be kept from the door, and, in addition, the small earnings are not always laid out to the best advantage. The child feels the pinch even before he is born. The mother being half-starved, and sometimes, possibly, half-drunk as well, the very earliest period of bodily development is sadly interfered with, and when the poor infant does eventually come into the world his conditions are not improved. The first seven years of life constitute a period when the child requires good food, good clothing, and good attention generally; but poverty and what it brings in its train will not allow of these.

The systematic treatment of poverty is of course in the hands of Boards of Guardians, but whether the tendency to place all kinds of local administration under the control of the Municipal or District Council will spread itself to Poor-Law matters the future alone can demonstrate. The Manchester Boards are now doing a great work, at their Swinton schools, in making a complete alteration in the bodily and mental development of destitute children by bringing them up under the most healthy conditions and surroundings, giving them a good education, and turning them out able to earn a proper living. There is, however, a class above the destitute which could do with assistance without being pauperised. The children of mothers who have to turn out and work could do with being properly supervised and attended to, and this would come more within the province of the municipality. The establishment of day nurseries in poor neighbourhoods would be quite within the scope of municipal enterprise. The older children of this class can now have their bodily needs attended to by the establishment of a system of providing meals at school, an arrangement of which character is already in vogue in Manchester.

Overcrowding and its ill-effects are being extensively battled against by corporations all over the country. The housing of our working classes, the regulations of lodging-houses, cellar-dwellings and work-rooms, the enforcing of building bye-laws, the provision of parks and open-spaces, and the general widening of streets and thoroughfares are all examples of work done in this direction.

The Manchester Corporation began operations in 1885, when the "Unhealthy Dwellings Committee" was appointed, with Alderman Walter Smith as its first chairman. The first proceedings were taken under a Local Act, which gave similar powers to Part II. of the Housing Act of 1890. At the beginning of the work there were 8,000 back-to-back houses in the city, all of which exhibited most insanitary conditions. From the period mentioned to the end of 1902, 5,103 houses have been closed, demolished, or added to other houses, leaving roughly about 3,000 which will still have to be dealt with. This method of dealing with insanitary property is slow, but it has at least three important advantages: it throws the onus of putting the houses into habitable order on to the owner (a small amount only being allowed for actual demolition), it is not costly for the ratepayers, and it gives displaced tenants plenty of opportunity to get re-housed.

Action has also been taken under Part I of the Housing of the Working Classes Act. Between 1889 and 1900 eight areas, accommodating a population of 3,127, were cleared, and provision made on five of the sites for 2,729 people. With the object of ascertaining in a practical manner the style of dwelling most suitable for the requirements and susceptibilities of the Manchester people, four different methods of re-housing were adopted. Block dwellings, tenements, cottages, and a lodging-house after the type of the Rowton Houses have been erected, and all are satisfactorily tenanted. Dr. Niven, in his 1902 Annual Report, makes an interesting comparison between the death-rates on two of the areas before and after the erection of dwellings thereon. With the former insanitary property the death-rate on one area was 57 per 1,000, and that on the other area was 51 per 1,000. Unfortunately the figures available only covered the three years prior to demolition, and one must therefore recognize a certain amount of unreliability in an average rate for that short period, but the difference is sufficiently striking to merit serious notice. The average death-rate for the period of eight years after the completion of the dwellings being 28·78 in place of 57, and 33·43 in place of 51. Borrowing powers have recently been obtained for the erection of another set of dwellings in a congested part of the city, and two other schemes for the building of cottages or tenements are in course of preparation.

The Corporation is also making an extensive experiment in a different direction. An estate of 187 acres, on the outskirts of the city, at Blackley, has been purchased for the purpose of erecting cottages, and 150 of these have just been completed. The idea of the Sanitary Committee is to see what the provision of suitable houses, combined with cheap tram fares, will accomplish in the direction of inducing the town dwellers to get out to a more salubrious atmosphere.

As regards other directions in which the crusade against overcrowding is being carried on, it should be mentioned that both "common" and "registered" lodging-houses are kept well in hand, cellar dwellings have been abolished, and that canal boats are placed under close supervision. Shops and workshops are very efficiently looked after in Manchester by a staff of six inspectors, two of these being ladies. Our city is not behindhand in street improvements, and possesses a Parks Committee which thoroughly realizes the necessity of providing plenty of breathing space for the public. As regards this latter provision the change which has been brought about during the last few years has been little short of marvellous. In 1880 there were four parks with a total area of 115 acres, and no open spaces; during the ten years following one park of 5 acres and eight open spaces taking up 35 acres were added. Since 1890 the number of parks has been increased to ten and the open spaces to thirty; the total area being now 1,103 acres. In other words, the park and recreative space has been increased ten-fold in a little over twenty years.

Improper food and feeding, drink, filth and ignorance exercise an adverse influence on bodily development in the rising generation, and they are all more or less capable of some degree of municipal treatment.

The inspection of food, the strict supervision over the milk supply and, in some instances, the partial municipalisation of this, the control exercised over bakehouses, and the spread of instruction in the choice and preparation of food show good evidence of the activity of local authorities in securing the right kind of nutriment for the people, and as for the control of drunkenness, that is in the hands of the municipal police. The plentiful supply of pure water, the provision of efficient sanitary conveniences, proper drainage and sewage disposal, public baths and wash-houses, all tend to the amelioration of filthy conditions in the habitation and in the inhabitant. Ignorance is also to a certain extent treated municipally.

Manchester is not behind other authorities in these methods of treatment, but in certain particulars is perhaps somewhat ahead of her neighbours. The Waterworks Department provides a supply of pure water for a population of 1,100,000, and, besides having reservoirs near home of a capacity of 6,006,000,000 gallons, will be able to bring from Thirlmere, 96 miles away, as soon as the works are completed, 50,000,000 gallons per day for 160 days, without drawing below the original margin of the lake and without the assistance of rain for that period. In eight years' time the drainage of one-half the buildings in the city has been reconstructed by the contractors of the House Drainage Department on most modern principles, and, as is somewhat rare with corporations, the same standard of sanitary requirements is exacted for new buildings. The Baths Committee are doing good work in establishing general cleanliness amongst the right class of people. They have provided nine sets of public baths, including 21 swimming baths, 388 wash-baths, and 2 Turkish baths; and four other sets either are in course of erection or will be shortly. Scholars under the control of teachers are admitted free to the swimming baths, if without a teacher the charge is 1d. and ½d., according to class. The total number attending the baths during the last year was 1,031,434, of these 417,357 were school children. This cheap bathing of school children is a very important feature of the Manchester system, and the great good being accomplished is shown by an increase of 39,273 over the number of baths taken during the previous year.* I should also mention that the Corporation provides free instruction in swimming.

Regarding the treatment of ignorance it is worth while mentioning the work of the Ladies' Health Society. The poorer quarters of the city are mapped out into districts, each one being supervised by one of the Society's visitors. These visitors are subsidised by the Corporation, and therefore act under the direction of the Medical Officer of Health. During 1902, 30,027 inspections of houses were made in the course of their systematic visitations; they also made 1929 special enquiries in cases of death, and laid 1,300 complaints as to insanitary conditions detected as a result of their inspections. By the distribution of 30,000 leaflets and by personal instruction in the prevention of disease, the importance of cleanliness, the proper feeding of infants and the general management of children, as well as in any other where advice could be likely to benefit, a great educational work has been carried on among the very poor. 10,164 rooms, yards, closets, etc., have been thoroughly cleansed and limewashed through their agency; 278 cases of neglected children have been discovered, and their parents either warned or reported to the Society for Prevention of Cruelty to Children; miscellaneous help has been rendered to 3,508 families. A great feature of these female health visitors is that their motto is not "Do as I say," but "Do as I can and will show you how to do." Hence the success which attends their efforts.

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* The Report of the Baths Committee for 1903–4 shows a further annual increase of 178,989, this being mainly due to permitting scholars to attend free without their teachers during the summer holidays.

A most important addition has recently been made to the means possessed by local authorities of dealing with the problem. The supervision of all school children within their boundaries must of necessity have an enormous influence for good in the near future. All these bodies have medical officers ready at hand who are capable of advising on the best methods of utilising the opportunities created by the Education Act, and it is no doubt important that these skilled advisers should be utilised to the utmost.

It is easy to appreciate the direction in which improvement is to be effected. I much regret, however, that time will not allow me to particularize just a little on this branch of the subject. I shall only be able to give a few headings. Briefly, the development of the body can be aided by the establishment of suitable physical exercises, the importance of personal cleanliness can be practically inculcated, the half-starved child can be fed, the necessity of strict attention to the teeth can be brought home both theoretically and practically, the principles regulating the choice of the right variety of food and the cooking of the same can be well grounded on the youthful female mind, and, lastly, a very important feature will be the systematic teaching of certain necessary principles of personal and general hygiene.

The great work that has been accomplished by philanthropic associations in the direction of improving the physique and surroundings of the poor cannot be allowed to pass without suitable acknowledgement, but it must be recognized that, to reach the whole community, the efforts must be systematic and universal, and such can only be accomplished by the municipality. The good results, however, of voluntary work among the few form an excellent index of what is to be accomplished in the future when the problem is completely taken in hand by the representatives of the people.

DISCUSSION.

Dr. Vacher alluded to the splendid work done by Manchester in the provision of parks, recreation grounds, open spaces, and the like, with a view to improving the physique of their population.

Dr. Niven in a most interesting speech alluded to the work which was being carried out in Germany, and particularly in Elberfeld, with a view to the prevention of physical deterioration. He had been much struck with an organization which was being tried in Elberfeld in order to help the poor not only by advice on matters of personal and domestic hygiene, but also by substantial assistance to obtain an adequate food supply. He also drew attention to the system of working men's insurance in vogue throughout Germany.

Dr. Sergeant emphasized the importance of frequent medical examination of school children, which in addition to providing valuable information on the question of national physique, also incidentally was the means of discovering latent cases of such dangerous infectious diseases as diphtheria and infectious sore throat.

Dr. Chadwick gave it as his opinion that drink and dirt, together with other insanitary conditions, were mutually convertible factors, and stated that he had been able to emphasize the importance of the subject of infant mortality to his Council by drawing an analogy between the death-rate amongst infants and that amongst young cattle. He had pointed out to his Council that if the death-rate amongst calves were only half or a quarter of that which prevailed amongst infants, the farmer would before very long give up entirely the business of rearing cattle.

Dr. Tattersall was of opinion that for the large evil which had been so ably put before the meeting by Dr. Dearden, there was no panacea. Physical exercises in the schools only remedied one portion of the mischief. He believed that the influence of medical officers of schools would be an undoubtedly good one, but what he would like to see above everything was the keeping away from school altogether of children until they attained the age of six or seven.

Dr. Wheatley did not agree with the conclusion evidently arrived at by Dr. Dearden that a reduction in the general death-rate implied an advance in physical condition amongst the population generally. To his mind the factor principally concerned was the great increase which had taken place during late years in the urbanisation of the country. As town life increased and country life decreased there was bound to be more or less physical deterioration of the population.

Dr. Meredith Young added his thanks to those previous speakers for the excellent paper they had heard. He would merely allude to two items, *viz.* those of recreation grounds and those of the teaching of school hygiene. In connection with the first he was strongly of opinion that recreation grounds should be under closer supervision than at present. Frequently they were monopolized by big rough lads to the exclusion of the smaller members of the community, who were thus almost entirely forced off the recreation grounds. He was a strong advocate of all recreation grounds having some portion of their space fenced off for use only by children under the age of 9 or 10 years. He further alluded to the fact that municipalities were frequently deterred from making recreation grounds just because they found it a matter of financial difficulty to acquire one sufficiently large and fitted up in a manner suited to the dignity of the town. He cordially agreed with the recommendation made by the late Dr. J. B. Russell many years ago, that small spaces should be acquired here and there throughout the town by demolishing say a couple of cottage houses, the space thus left being merely paved with some impervious material, and thrown open to all the children in the neighbourhood.

In connection with the teaching of school hygiene he was in cordial agreement with those who advocated the system that medical men should be employed to teach the school teachers, but that the school teachers should be then left to teach the children; but he thought it was a great mistake for medical men who did not know how to teach school children to be appointed to give lessons or lectures in schools to the children direct.

Dr. Dearden thanked the meeting for the reception they had given him for his paper, and stated that he did not think municipalities had had enough credit given them for work done.

Ankylostoma in Coal Mines.—The committee appointed by the British Association for the Advancement of Science to consider the probability of ankylostoma (miner's worm) becoming a permanent inhabitant of our coal mines, in the event of its introduction, have presented an interim report, of which the following is a summary: There are many channels by which ankylostoma might be introduced into British coal mines. The conditions found underground in these mines are such that the worm would, in many cases at any rate, probably become firmly established. In view of the expense and difficulty of eradicating the worm from any mine in which it has become established, it is of the greatest importance that preventive measures should be undertaken without delay. Complete eradication does not yet appear to have been ever accomplished. The necessary prevention is best accomplished by the provision of proper sanitary accommodation in the main roads underground and at the pit's mouth, by regulations to prevent pollution of the pit by human fæces, and by the establishment of a limited quarantine system for workpeople from infected areas with compulsory notification of cases to the Home Office.

School Children and Vaccination.—Mr. T. Garrett Horder, in a paper read before the Wales and Monmouthshire branch of the British Medical Association at Carmarthen (Dec. 7th, 1904), said that as the Government would probably introduce next Session a Bill dealing with the Vaccination Acts, it was important that the voice of the medical profession should be heard. It appeared to him that the administration of the Vaccination Acts should not remain with the boards of guardians, but should rest with a sanitary authority. Much valuable time during an epidemic would be saved if one authority were responsible both for the treatment of the cases and the vaccination of all those persons who had come into contact with the patients suffering from smallpox. As the county and borough councils were now responsible for education, they had a magnificent opportunity of securing the vaccination of the many thousands of children who now escaped the vaccination officers. The education authority could easily obtain power to insist that every child (excepting those whose parents had obtained exemption orders) should before registration in an elementary school satisfy the authority that it has been efficiently vaccinated. Mr. Horder then gave statistics taken from the Local Government Board returns showing from the number of unvaccinated children, or children whose vaccination could not be proved, that, if the community were to be better protected, steps were urgently needed to have the first and most important line of defence against smallpox more efficiently guarded. He believed that many parents who objected to infantile vaccination would not object to the operation when their children reached school age. However zealous the vaccination officers might be, they could not trace every child; but the education authorities had to make a periodical census of their districts, and so were able to discover the number of children who were not attending school.

AN OUTBREAK OF DIPHTHERIA TRACEABLE TO ULCERS ON COWS' TEATS.*

BY WM. ROBERTSON, M.D., D.P.H.,
Medical Officer of Health, Leith.

IN the September issue of PUBLIC HEALTH, Dr. Chalmers, of Glasgow, dealt with an outbreak of "septic" sore throat which had coincided with an eruption on cows' teats. Having recently passed through a somewhat similar experience I am able in the present contribution to add interest to a subject that calls for close study and research.

The Leith outbreak differs from that which occurred at Glasgow in that the great majority of the cases notified in Leith were true diphtheria, the Loeffler bacillus having been found by microscopic and bacteriological examination. On that point there is no possible doubt. Also the outbreak was a long drawn out one, the first case having been reported to me at the latter end of June and the last two cases on October 16th. The outbreak was not a serious one from the point of view of numbers, but affecting as it did a residential district it created a great deal of alarm and uneasiness.

When the third case was notified, in each of the three cases the same milk supply being involved, suspicion was aroused. The farm was visited, but I could not detect any suspicion or evidence of sore throat among any of those employed at the farm. Both outbreaks simulated one another in that when the greatest number of cows were affected the largest number of diphtheria cases were notified. Also in Leith, as in Glasgow, the hands of some of the milkers were infected, in one case by small punched-out sores (ruptured pustules of cow-pox no doubt) on the inner aspects of the fingers; in the other with onychia of the small finger of the right hand. I had one of these hands photographed, but the lesions were very imperfectly demonstrated. Lastly, just as occurred in Glasgow, with the stoppage of the milk supply from the affected cows the spread of diphtheria immediately ceased. While then the two outbreaks are in several respects much alike, they differ as to the resulting infection from the teat condition.

I know that many cases of what were looked upon as "septic" throats did occur while diphtheria was being spread by the infected milk. The many swabs submitted to us proved the existence of cases from which the true Loeffler could not be isolated. These cases were very properly looked upon as "septic," though one or two of them showed, clinically at least, that they had been actually instances of diphtheria. I speak of post-diphtheritic paresis.

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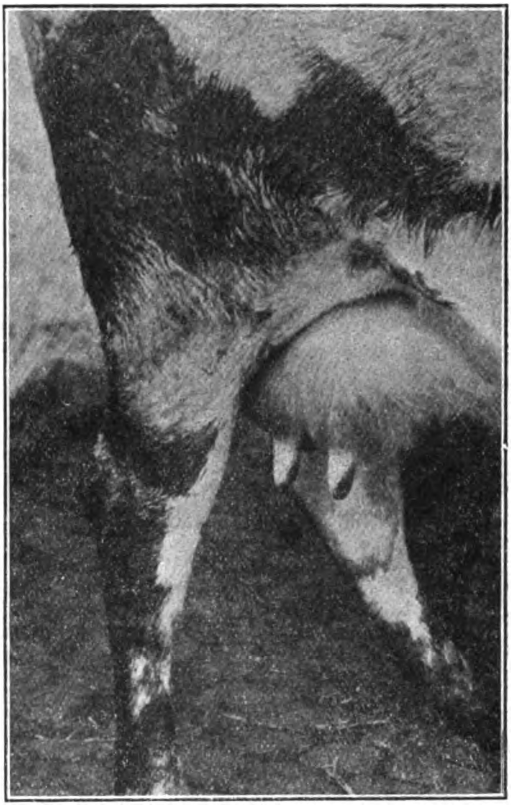
* A minor outbreak of this kind was reported in the *Journal of Hygiene*, April 10, 1902.

After the occurrence of the first few cases the succeeding notifications pointed to houses drawing their milk supply from other sources. This detracted attention from the farm already mentioned, but with the renewed cropping up of the farm as a source of possible spread of infection, inquiries elicited the fact that the four other implicated dairies derived their supply in whole or in part from the farm. Not the least peculiar feature, too, was the periodical interruption in the sequence of notifications. A glance at the dates of notifications will make that point more clear. It is very difficult to account for this feature of the spread of infection. Perhaps, however, had all the cases that undoubtedly did occur been notified to me the sequence might not after all have been so broken. Since, however, we are dealing with actual cases that came to my knowledge, I can only refer to them.

Having now satisfied myself that the source of infection was at the farm, a visit was paid to it, and another examination of throats made. Again the results were negative, and in response to my suggestion that some of the cows must be suffering from ulcers or sores on their teats (it was in truth a random guess), the farmer replied that one cow did have a "chapped" (fissured) teat. An examination of this cow revealed not "chaps," but sores that had been recently bled as a result of milking operations. That afternoon the Veterinary Inspector visited the cowsheds in which there were forty-five cows, and reported to me that five cows were suffering from ulcers on their teats. The existence of drying pustles on some of the udders convinced the Veterinary Inspector that the condition was one of cow-pox.

Having ascertained these facts, I wrote to the farmer, asking him to isolate the affected cows, to boil their milk before selling it, and lastly to delegate one person to milk these animals and no others. A week passed and much to my disappointment cases of diphtheria and "septic sore throat" were still notified or reported. A second visit to the farm revealed the extraordinary fact that not a single one of my recommendations had been put into force. The farmer had never heard of cow-pox producing diphtheria, and my instructions went unheeded. A detailed examination showed that there were now 15 cows suffering from ulcerated teats, some in a worse condition than others. A dairymaid was laid aside owing to the outbreak of pustules on her hands, and the son's fingers were swathed in bandages. Again, and this time accompanied by threats, the farmer was instructed to do what he was told. But to make certain that he would obey me, I sent out three inspectors, one at each milking, to watch the operations.

The farmer had promised to boil or pasteurise the milk from the diseased cows. The unexpected presence of an inspector at 4 a.m. proved that had the watch not been established the milk would have been sold as usual. There were no preparations made for boiling or pasteurising. Faced with an awkward development of his obstinacy the farmer preferred to pour the milk down the drains. Incredible as it may appear, when I visited the farm on the day following the son was still milking the cows.



Having now exhausted the powers of persuasion and diplomacy, I determined upon extreme measures. The facts were reported to the Local Authority, and I was empowered to insist upon and see to the carrying out by the farmer of any precautions that I might see fit to suggest. Confronted with this mandate the farmer gave way. It was about this time that most of the cases of diphtheria were notified, the cows suffering from ulcerated teats numbering nineteen. When on the 16th October two more cases occurred, I feared one of two things: First, that some of the cows had been returned to the healthy stock too soon, or, that the vigilance of my inspectors had slackened. There may have been a combination of these circumstances, but it is significant that an examination revealed the presence of another cow among the healthy stock with ulcers on her teats. With her isolation there was no more trouble from the farm. The number of cows now suffering from sore teats had been reduced to five, and having come to recognize the error of his ways, his financial loss having been very heavy, the farmer agreed to sell these five cows to the butcher. Thus ended the "fearful epidemic" which had disturbed the citizens of the aristocratic district mainly involved.

BACTERIOLOGY.—Over and over again swabs were taken from the ulcers on the teats, but never once was the Loeffler bacillus found. On every occasion streptococci and staphylococci were discovered. Now and again an organism possessing the microscopical and cultural characteristics of the Klebs-Loeffler was detected. This organism was also found in swabs taken from the throats of several of our patients. In the Glasgow outbreak it is remarked by Dr. Chalmers that an organism was recovered which, to use his own words, "had some of the morphological and cultural characters of the diphtheria bacillus. It lacked, however, the feature of pathogenicity, *i.e.* it was not fatal to animals." At first blush this might appear to be conclusive proof regarding the want of connection between the teat eruption and the diphtheria at Leith. One must, however, temper that statement with one made by such eminent authorities as Muir and Ritchie who say: "A positive result on inoculating a guinea pig (say with 1 c.c. of a 24 hours' broth culture) will be conclusive, but we consider that for all practical purposes an organism having all the microscopical and cultural characters of the diphtheria bacillus, may be accepted as such. *Even if it is non-virulent it is probably only an attenuated diphtheria bacillus.*" One might spend much time in speculating as to how an attenuated form of the bacillus reached the ulcers. Many conjectures could be advanced. But if be the case, as has been proved, that attenuated and true forms of the Loeffler bacillus exist in the throats of healthy persons, the infection of the cows' ulcers may be thus accounted for.

Concluding Remarks.—All through this past summer milch cows in large numbers have been coming from the North of England, and a great many of these cows have been affected by cow-pox. The dairyman in this part of the country does not look upon cow-pox as a serious malady; indeed, he continues to sell the milk from the affected cows. His only trouble in the past has been that he lost the services of several of his employees as the result of the infection of their hands by the cow-pox. This is in itself a hint full of suggestion to the Health

Official and one that must be kept in mind. It was because the farmer never had heard that cow-pox could produce diphtheria that he placed so many obstacles in my way.

The very fact that danger lies in the existence of ulcers on cows' teats proves the necessity for periodical and methodical inspection of milch cows. The onus of notifying such a condition ought to be placed upon the shoulders of the dairyman who has cows with ulcerated teats in his keeping.

The Leith outbreak has been of great value to me since the Local Authority has passed a unanimous resolution to the effect that grooming of cows, washing of teats and udders, and washing of hands will in future be enforced. Also that the salary of the Veterinary Inspector be increased so as to enable him to report monthly to me regarding the condition of the cows in the Burgh. There are no fewer than 1760 milch cows in Leith alone. The dairymen some time ago formed themselves into a strong association to resist my fault-findings; fortunately they have been very unsuccessful in their baulking efforts. This resolution of the Local Authority has staggered them. It takes a great deal to stagger an East of Scotland dairy keeper.

Dates on which cases of Diphtheria due to infected milk supply were notified.—1904: June 24th and 27th; July 11th and 18th; Aug. 1st, 5th, 9th, 19th and 23rd; Sept. 10th, 13th, 14th, 16th, 20th, 24th, 26th and 27th; Oct. 16th.

THE FACTORY AND WORKSHOP ACT.—An order of the Secretary of State, dated November 15th, directs that the special exception by which the period of employment of women may on certain days and subject to certain conditions be between 6 a.m. and 8 p.m., or between 7 a.m. and 9 p.m., or between 8 a.m. and 10 p.m. shall be extended to the non-textile factories and workshops in which the making-up of any article of table linen, bed linen, or other household linen is carried on; provided that (1) There shall be in each room in which overtime is being worked at least 400 cubic feet of space for each person employed therein; (2) A woman shall not be employed overtime on any other process other than a process named in this order. The order came into force on December 1st.

As much of the work in workshops and factories is in the hands of women, it is most important that the sanitary surroundings should receive special consideration. The health and well-being of the next generation is immediately dependent on the good physique of the present race of young women and girls, and this requires that they should work in healthy surroundings and be fed on nutritious food. You cannot expect grapes from thorns nor figs from thistles, and a strong, vigorous race of men and women cannot be reared from women whose life is spent in a close, vitiated atmosphere, and whose staple articles of diet are strong tea, bread and butter, potatoes, and sweet stuff.—J. Hedley Marsh, *Annual Report*, Macclesfield.

DRIED MILK.

By JOSEPH PRIESTLEY, B.A., M.D., D.P.H.

In the November issue of Public Health, attention was drawn to Dried Milk, and as I was engaged at the time upon an investigation and enquiry into different milk processes that have recently been brought forward, it may be of interest if I give a short account of my own results (including chemical and bacteriological analyses), in so far as Dried Milk is concerned, up to date.

Dried Milk is obtained by evaporating the water and leaving the solids (proteids, fat, sugar, salts, etc.) in the form of a dry powder, which can be re-constituted by the addition to it again of the water at any time. The process is a simple one, the milk being passed over large heated surfaces obtained in the form of two steam-heated, polished metal cylinders, generally revolving inversely at a rate of about six revolutions a minute, and whose surface heat is as much as 220–230° F. or more. The cylinders are arranged horizontally and parallel one with the other, in a solid framework, and separated from one another by an interval of about $\frac{1}{8}$ of an inch. The water is thereby instantly evaporated, and a continuous, moist, thin film or sheet of milk solids is formed, and (in the Just-Hatmaker machine) removed by means of a stripping knife in contact with the cylinders. These moist milk-solids dry instantly upon cooling, and are rapidly reduced to a uniform powder (light-yellowish and flakey) by being passed through a sieve. The time occupied in the process is slightly under thirty seconds. Bacteriological examination (*vide infra*) shows that this dried milk is sterile when it leaves the machine, and the milk-solids of which it is composed are, as far as determinable by chemical means, unchanged in chemical composition, and therefore, presumably, in nutritive quality also. It would appear, however, that the percentage of butter-fat is slightly lowered. Further, the casein is altered in such a way as to form, with the action of the gastric juice, small, finely granular clots, such as are produced from human milk (and not large clots, as is the case in ordinary cows' milk), thereby facilitating considerably its digestion and assimilability. It is possible to evaporate and convert into powder 70 gallons of milk per hour, and this conversion can, if desired, be carried out at the farm, newly-drawn milk being used, and the dried milk powder transmitted anywhere, with a minimum of risk of contamination by germs or dirt.

The dry milk powder is re-constituted into fluid milk by the addition thereto of hot (170° F.) water that has previously been boiled, and this re-constituted milk is practically indistinguishable by sight, smell, or taste (at least to most palates), or even by chemical, physiological, or dietetic tests, from ordinary fresh milk (untreated), whereas, bacteriologically, it is, generally speaking, superior—in fact, sterile, provided, of course, that due care be taken to prevent the dry powder from getting contaminated, and to see that only distilled (sterile) water is used for re-constitution. Actual experiments in America appear to show that even virulent bacilli, *e.g.* of tuberculosis or anthrax, if added to the milk before it is dried or converted to powder, are destroyed by the process; whilst in its dried state the milk is indefinitely preservable. According to the directions given, 1 lb. of the powder makes 1 gallon of the ordinary fluid; or, to be exact, 100 lb. of full cream milk, when treated, makes

12½ lb. of dry milk powder (with 30 per cent butter), or 100 lb. of separated milk makes 9 lb. of dry separated milk (with 1 per cent butter). By the drying process 85 per cent of the weight of the milk is lost, with proportionate reduction in its volume. Indeed, the smallness of the space occupied by this dried milk may be further lessened by hydraulic pressure, thereby forming compressed tablets which are useful for travellers, sailors and soldiers, bakers, restaurant keepers, etc.

The most trustworthy experiments hitherto published are those carried out by Dr. Wm. S. Magill, M.A., M.D., the Chief of the Research Department of the Carnegie Laboratory of New York, and his practical feeding tests are specially noteworthy, dealing with 850 children fed upon the milk, under medical supervision, for a period of four months, the milk being freshly re-constituted from new dried milk (to which milk-sugar was added as required). No other food was given. The children were not selected in any way, but were simply average, healthy children from the poorer classes, and the tests were applied during the four hottest summer months when, in New York, infantile mortality reaches its maximum. It is stated that not one of the 850 children died, and all gained weight, though amongst similar children, fed upon ordinary milk, during the same period, the death-rate was 40 per cent. The experiments appear to have been carefully carried out, and the results, as far as they go, to be therefore trustworthy, though few in numbers. In England, too, this Dried Milk has been put to a practical test for a short time by Dr. Beaumont, M.O.H. for East Ham, having been used by him for a period of three months (July, August, and September, 1904) in the Scarlet Fever Convalescent Home. Dr. Beaumont informs me that the children liked it, and that there was no case of diarrhœa amongst them during that period, though the diarrhœa rates at that time for the district outside the Home were exceedingly high, *viz.* July, 1·5; August, 14·1; and September, 2·0 per 1000. The Dried Milk was also sold from the East Ham Town Hall and from a depot (on behalf of a private company) at the same time, but no reliable statistics connected therewith can be given, as no trustworthy record was kept of the customers supplied privately. Dried Milk is also being solely used at present at the Crèche, Ilford, Essex, under the directions of Dr. Elizabeth A. Dunn, to whom I am indebted for the information that the results, up to date, are satisfactory, though at present the statistics are too few to warrant definite conclusions being drawn. Dr. Elizabeth Dunn finds, she informs me, that the addition to the re-constituted dried milk of a little prepared barley-water is advantageous. More such dietetic experiments are desirable with carefully recorded results.

Chemical analyses which I have recently had made show results which tally with those already published in *Public Health* (November, 1904). Thus, taking the half-cream dried milk, the averages of my own analyses (out of twenty samples analysed) show as follows (full-cream and separated dried milks varying only in the proportions of butter-fat and lactose): Proteids, 29 per cent; butter-fat, 16 per cent; mineral matters, 7 per cent; lactose, etc., 41 per cent; moisture, 7 per cent.

Bacteriologically, the result of my experiments shows that the milk (freshly re-constituted with sterile water) gives equally satisfactory results on examination. The milk is sterile, at least as far as the commoner forms of bacteria are concerned, *e.g.* streptococci, staphylococci, torulæ, diplococci, sarcinæ, etc., no colonies being obtained from inoculation of the milk on nutrient gelatin and agar plates. This was to be expected, having regard to the high temperature at which the fluid milk is converted into dried milk; but, on the other hand, the shortness of the exposure to such temperature makes it likely that perhaps sterilization would not be absolutely complete. It may still prove, on further experiment, that a highly resistant germ or spore, like anthrax, may escape destruction on account of such a very short exposure, but such a germ is rarely, if ever, found in milk. At any rate, the ordinary germs met with in everyday milk appear to be killed instantly, with the result that the milk may be regarded for all practical purposes as sterile.

Having no drying machine at work, my own bacteriological experiments did not include the introduction of such germs as the *Bacillus anthracis* and the *Bacillus tuberculosis* into the milk with a view to proving that their passage through such machine would destroy them, as stated to be the case by American observers.

From these analyses it appears that a pure milk (bacteriologically and otherwise) can be obtained from carefully-prepared dried milk powder by re-constitution with warm water (boiled previously), affording a likely trustworthy article of food; and the uses to which such dried milk may be put will at once suggest themselves, apart from its use in children's and other hospitals, public institutions, etc., wherein its re-constitution can be carried out under careful and strict supervision, and in connection with which no suitable public sterilized (Pasteurized) milk supply is conveniently available.

Compared with ordinary condensed milks, which contain quantities of added cane sugar, or may be chemical preservatives (benzoate of magnesium, etc.), the dried milk is better, in that it needs no such added sugar nor added preservatives (chemical or otherwise) to keep it in a sterile or aseptic state.

It has been suggested that the dried milk (re-constituted in proper strengths) might take the place of ordinary sterilized humanized (modified) milk for use in municipal milk depots; but in that case the milk, previous to being dried, might have to be modified, *i.e.* humanized, by: (*a*) The addition of cream, lactose, etc.; and (*b*) the abstraction of a portion of the casein.

I am indebted to the Galak Milk Products Co., Ltd., of 118, Fenchurch Street, London, E.C., for the samples of dried milk used in my analyses, though, for comparison, samples of other dried milks from other firms were obtained and examined at the same time.

THE STIRLING COUNTY COUNCIL has increased the salary of Dr. M'Vail, Medical Officer of Health, by £150, making it £850. Part of the salary is paid by Dumbartonshire, who have a joint right to Dr. M'Vail's services.

CONTROL OF WATER SUPPLIES.—The Glasgow Congress adopted a motion by Dr. Kaye that the whole question of water supplies demands investigation by a Royal Commission, appointed specially to deal with that subject, and that representations be made to Government accordingly.

THE KING has been pleased, on the recommendation of the Secretary for Scotland, to appoint Dr. W. Leslie Mackenzie to be medical member of the Local Government Board for Scotland, in the room of Dr. Russell, deceased.

LAW REPORTS.

HIGH COURT OF JUSTICE.

COURT OF APPEAL.

November 11th, 12th and 14th, 1904.

BEFORE HENN COLLINS, M.R., STIRLING AND MATHEW, L.JJ.

THOMPSON *v.* MAYOR, ETC., OF ECCLES.

HARDICKE *v.* FRIERN BARNET URBAN DISTRICT COUNCIL.

Public Health Act, 1875, Section 41—Public Health Acts Amendment Act, 1890, Section 19—Drain or Sewer—Single Private Drain.

When a pipe passes through private land and receives the drainage of several houses, some of which houses belong to one owner, and others to one or more owners, and conveys that drainage to a public sewer, such pipe is "a single private drain" within the meaning of Section* 19 *of the Public Health Acts Amendment Act,* 1890, *and when a complaint is made of a nuisance arising from such pipe, it is repairable by the owner or owners, and not by the local authority.

BRADFORD *v.* MAYOR OF EASTBOURNE (1896) 2 *Q.B.* 205 *approved.*

In construing Section* 19 *of the Act of* 1890, *the whole of Section* 41 *of the Public Health Act,* 1875, *is to be deemed incorporated with it.

These two appeals were heard together, as they both involved the same point, namely, whether the owner of several houses which drained into a pipe in private land, which pipe also received the drainage of other houses belonging to other owners, and conveyed it to the public sewer, was liable to pay the expenses of the repair of such pipe, by reason of such pipe being a single private drain within the meaning of Section 19 of the Public Health Acts (Amendment) Act, 1890. The facts in *Thompson* v. *Mayor, etc., of Eccles* will be found in the report of the case before the King's Bench Division at 16 PUBLIC HEALTH, p. 641. In that case the divisional court held that the pipe was not a single private drain, but a sewer. In the second of the above cases the facts were not substantially different, except that the owner had done the work, and sought to recover the expenses from the local authority. *Channell, J.*, had given judgment for the owner on the ground that even if the pipe was a single private drain, the authority had not complied with the provisions of Section 19 of the Act of 1890, and so had not relieved themselves of the burden of repairing. The Court allowed both appeals.

Macmoran, K.C., and *Fleetwood Pritchard* appeared for the Corporation in the first case, and *Rhodes* for the plaintiff; and in the second case *Macmorran, K.C.*, and *Colam* appeared for the plaintiff, and *Clavell Salter, K.C.*, and *Duckworth* for the defendant Council.

The MASTER OF THE ROLLS said that these two appeals raised substantially the same point, though a further point was raised in the second case. The first appeal raised the question as to the effect of Section 19 of the Public Health Acts Amendment Act, 1890, and how far it extended in altering the former state of the law. By Subsection 1 of that section, "where two or more houses belonging to different owners are connected with a public sewer by a single private drain, an application may be made under Section 41 of the Public Health Act, 1875 (relating to complaints as to nuisances from drains), and the local authority may recover any expenses incurred by them in executing any works under the powers conferred on them by that section from the owners of the houses." By Subsection 3, "For the purposes of this section the expression 'drain' includes a drain used for the drainage of more than one building." Up to that time a pipe used for the drainage of more than one building was a sewer and not a drain. Therefore by Subsection 3, for the purposes of that section only, the expression drain was to include a drain used for the drainage of more than one building. That section applied Section 41 of the Public Health Act, 1875, which provided that if any drain on or belonging to any premises was complained of as being a nuisance or injurious to health, and, if on examination the drain appeared to be in bad condition or to require alteration, the local authority were to require the owner or occupier of the premises to do the necessary works, and, if default was made, they might do the works themselves and recover the expenses from the owner. The word "drain" there meant a drain in the old sense as one used for the drainage of one building only. The drain in question in the present case was used for the drainage of two or more houses belonging to different owners, and was indistinguishable in its character from the drain in many of the cases referred to in the course of the argument, and notably in the case of *Bradford* v. *Mayor*, *etc.*, *of Eastbourne*. The question as to the true meaning of Section 19 of the Act of 1890, and especially the meaning of the words "single private drain" had been the subject of discussion in several cases. Upon examining those cases, it seemed to him that there was a clear balance of authority in favour of the appellants. It was not necessary to travel through all those cases again, because he could not improve upon the reasons so fully given by the late Lord Russell of Killowen and Mr. Justice Wills in *Bradford* v. *Mayor, etc., of Eastbourne*. That decision had been followed more than once. It laid down a reasonable and intelligible interpretation of the Section, and having fully considered the arguments and reasoning in that case, he would not waste time by stating them over again. For the reasons there given, the pipe was a single private drain, and therefore the appeal in the first case must succeed. With reference to the second case, "*Haedicke* v. *Friern Barnet Urban District Council*," the drain was indistinguishable from the drain with which he had been dealing in the last case. There was, however, a further point taken in this case. The plaintiff was called upon by the local authority to abate a nuisance existing in a drain within the definition in Section 19 of the Act of 1890. The plaintiff did the work, and brought this action to recover the amount so expended by her from the local authority upon the ground that she had been compelled to do work which they were legally compellable to do. The answer of the local authority was that, though before the Act of 1890 the pipe would have been a sewer repairable by the local authority, and though it might still be for other purposes a sewer, by Section 19 it was now a single private drain, and by the combined effect of Section 41 of the Act of 1875 and Section 19 of the Act of 1890, the plaintiff must do the work. Upon this question the judgment he had just given was in favour of the local authority. But a further contention was put forward, namely, assuming that the pipe was a single private drain within the Section as between the plaintiff and the local authority, the latter had not taken the proper steps to render her liable, and as they could not localize the cause of complaint as against her, they could not say that she, and she alone, was liable under the sections to make good the defect; and that, as they had not apportioned the expense among the other owners, they had not taken the necessary steps for insisting upon her liability, and that the burden of repairing the defect was still upon the local authority, as they had not taken the proper steps to place it upon the plaintiff. The answer to that contention was plain. Broadly speaking, the Legislature had thrown back upon the private owner what had been placed upon the local authority, namely, the remedying of a nuisance existing in a single private drain as specified in Section 19 of the Act of 1890. That being so, the obligation of abating the nuisance in the drain lay upon the plaintiff, and she was debarred from saying that any work done by her was done in relief of the local authority. The Legislature had laid the burden on her, and not on the local authority, and therefore she could not say that the burden was on the local authority by reason of their not having taken steps to place that burden on her. It was then said that this particular section could not be applied to what was done upon something which was not within the control of one particular owner, namely, a sewer which was on the premises of several persons. It was said that the nuisance must be taken as arising out of all the premises. But the facts here showed that the nuisance was ascertained by the local authority as arising on the plaintiff's premises, who was the owner of more than one of the houses. It was proved that the nuisance was abated by her without travelling out of her own premises. Therefore, upon the facts here, the plaintiff could not say that the nuisance was not upon her property. The nuisance was one which could be and was reached by the procedure of the two sections. No question of apportionment, therefore, arose—even if it were *ad rem*, which he did not think it was—as the whole obligation was on the plaintiff. The appeal in this case must be allowed.

STIRLING, L.J., in concurring, said that on the first point he agreed with the judgments in the Eastbourne case, and as to the second point, he was of opinion that Section 19 of the Act of 1890 must be taken to incorporate the whole of Section 41 of the Public Health Act, 1875, and therefore the authority had acted properly, and that no apportionment was necessary in a case where one owner could remedy the nuisance on his own premises.

MATHEW, L.J., concurred.

KING'S BENCH DIVISION.

July 1st, 1904.

BEFORE LORD ALVERSTONE, L.C.J., AND KENNEDY, J.

GARLICK *v.* KNOTTINGLEY URBAN DISTRICT COUNCIL.

Public Health Act, 1875, Sections 120, 121, and 308—Infected Clothing—Power of Medical Officer of Health to order Destruction—Compensation.

A Medical Officer of Health has no power to order the destruction of articles which have been exposed to infection from a dangerous infectious disorder, and if such articles are destroyed by an Inspector of Nuisances on the instructions of the Medical Officer of Health, the owner of the articles cannot recover compensation from the Sanitary Authority unless that Authority has either expressly directed or subsequently ratified the order to destroy.

This was an appeal from the decision of a County Court Judge, given in favour of the plaintiff, in an action brought to recover £38 14s., the amount awarded in an arbitration under the Public Health Act, 1875. The arbitration was held upon a claim for compensation made under Sections 121 and 308 of that Act, in respect of certain articles which had been exposed to infection, and which had been destroyed by the defendant Council's Inspector of Nuisances, acting upon the instructions of the Medical Officer of Health of the Council. The amount was made up of £14 8s. for compensation and £24 6s. for the costs of the arbitration. It was contended that these officers had acted on behalf of the Council, but it did not appear from the evidence that the Council had either directly ordered the destruction or had subsequently ratified it. The County Court Judge in deciding in favour of the plaintiff held that the Medical Officer of Health was the representative of the local authority in these matters, and had implied authority to order the destruction of the articles.

Bairstow appeared for the defendants, *Scholefield* for the plaintiff. The court allowed the appeal.

Lord Alverstone, L.C.J., in giving judgment said that he did not mean to decide as to what would happen in a case where the local authority had expressly delegated their power to destroy articles which had been infected. In this case there was no evidence of delegation, or that the Council had adopted or ratified the act of destruction. It was therefore necessary to look at Sections 120, 121 of the Public Health Act, 1875, to see whether on the face of those Sections either expressly or by implication the local authority could act through their Medical Officer. When it was considered that the sections affect the rights of property, he thought it was plain that the destruction of a person's property ought to]be done by the authority, or with the sanction of the local authority, and that it was not a matter left lightly by the Act within the discretion of the Medical Officer of Health. Of course, in case of very bad infection, it might be necessary for the Medical Officer to take steps, that there may be a special meeting of the authority to deal with the case, or if such a state of things existed, the local authority would, no doubt, be meeting to deal with the danger. But in his opinion Section 121 did not contemplate the mere opinion of the Medical Officer of Health, as sufficient for the destruction of articles exposed to infection, and he did not think it contemplated the local authority acting upon or ratifying the act of their officer. He expressed no decided opinion upon that point, because a case may occur in which the circumstances are different. Here nothing was proved, except that the Medical Officer, who was the private medical attendant of Mr. Garlick, thought that the articles should be destroyed, and ordered them to be destroyed.

Kennedy, J., in concurring, said there were only two ways by which this local authority could be made liable for the destruction of these articles. One of those two ways would be that the destruction of the articles was a part of the general duty entrusted to the Medical Officer of Health, and therefore the destruction by him was the destruction by them through their servants. There has been no attempt made, or could be made, to show that a Medical Officer of Health *virtute officii* has a right to order clothes and property exposed to infection to be destroyed. As far as that is concerned, it would seem to be a dangerous power to give. Then we were fairly pressed by *Mr. Scholefield* that it would be a sad thing for the public if a Medical Officer of Health had to wait for the permission of the local authority before destroying infectious clothing and articles. It was a noticeable fact in this case that it was not one of urgency, because in cross-examination the Medical Officer said he waited six weeks before he ordered the destruction of these articles. The Medical Officer of Health in this case cannot be said to have been in the position of one that acts because the emergencies demand that somebody should act, and he was the only officer who could act. He waited six weeks, and then ordered their destruction by the Inspector of Nuisances. Then the other way is by ratification. He did not see any evidence of ratification of the act, and, as this bedding or clothing while it remained infected might only have been lent, sold, transmitted or exposed, subject to a penalty not exceeding £5, under Section 126 of the Public Health Act, 1875, it is quite clear that it was quite safe where it was, and the natural thing would be that the local authority, who had never given any express authority, nor a general authority, in their appointment of Medical Officer, for such destruction, should be consulted before articles should be destroyed, the destruction of which would give rise to a legal right to compensation for the value of the property destroyed, which might have been disinfected. They certainly ought to have the opportunity, as representing the public, of saying if the additional expense ought to be incurred, if, indeed, any was involved.

July 11*th*, 1904.

BEFORE ALVERSTONE, L.C.J., KENNEDY AND PHILLIMORE, JJ.

HAUIS AND OTHERS *v.* SCURFIELD.

Public Health Act, 1875, Section 4—Drain or Sewer—Premises within the same curtilage—Houses separately occupied.

Separate dwelling houses occupied by different persons and built round a courtyard are not premises within the same curtilage, although they may have common access and use ashpits and water closets in common. The pipes draining them are therefore sewers and not drains within the meaning of Section 4 *of the Public Health Act*, 1875.

This was a case stated by justices on the hearing of an information laid by the respondent, as Medical Officer of Health for Sheffield, alleging the existence of a nuisance arising from certain defective surface channels in No. 1 Court, Eyre Lane, Sheffield. The defendants alleged that the channels were sewers, and not repairable by them. The justices held they were drains. The houses were built in blocks round a courtyard, and there were accesses, ashpits, and waterclosets used in common.

Danckwerts, *K.C.*, and *Beddall* appeared for the appellants, *Lush*, *K.C.*, and *Waddy* for the respondents.

The following cases were cited: *St. Martin-in-the-Fields Vestry* v. *Bird* (1895) 1 Q.B. 428. *Pilbrow* v. *St. Leonard, Shoreditch, Vestry* (1895) 1 Q.B. 433. *Wilkinson* v. *Llandaff and Dinas Powis Rural District Council* (1903) 2 Ch. 695.

ALVERSTONE, L.C.J., said, I have come to the conclusion that the decision of the justices cannot be supported. The cases cited have removed any doubts in my mind as to whether these channels could be considered to be sewers, and show that open channels such as these may be sewers. The justices have taken the view that they were not sewers, but drains, because they were used for the drainage of premises within the same curtilage. We cannot hold that eighteen houses, situated like those in this case, are premises within the same curtilage. There is no definition of a curtilage which would include the case of a number of houses separately occupied by different people, simply because there is a common access and to some extent common accommodation. Reliance was placed in the decision of the Court of Appeal in the case of *Pilbrow* v. *St. Leonard, Shoreditch, Vestry*, *supra*, but LORD ESHER, M.R., in that case expressly distinguishes it from the decision in *St. Martin-in-the-Fields Vestry* v. *Bird*, *supra*—the *Lowther Arcade Case*. In my opinion, the facts of the *Lowther Arcade Case* do not so clearly show as those in this case that the premises were not within the same curtilage. I think, therefore, that there was no evidence upon which the justices could properly hold that these houses were premises within the same curtilage, and that therefore these side channels were not drains, but sewers within the definition in Section 4 of the Public Health Act, 1875. The channels being sewers, the duty of cleansing them is cast upon the borough council by Section 19 of the Act. The appeal will be allowed.

Kennedy and **Phillimore**, JJ. concurred.

July 11*th*, 1904.

Before Alverstone, L.C.J., Kennedy and Phillimore, JJ.

MCNAIR *v.* HORAN.

Margarine Act, 1887, Section 6—Package to be branded—Tub behind counter in shop.

An open tub of margarine exposed in a shop from which tub margarine is scooped out and sold, is a package within the meaning of Section 6 *of the Margarine Act*, 1887, *and should be branded or marked with the word "margarine."*

This was a case stated by one of the Metropolitan magistrates on the hearing of a complaint by the appellant McNair, a sanitary inspector, alleging that the defendant, being a person dealing in margarine, did unlawfully expose for sale certain margarine contained in an open package which was not branded or durably marked "margarine" in printed capital letters. The respondent kept a shop and there sold margarine by retail. In his shop at the back of his counter there stood several tubs of margarine open at the top. They were in full view of any one entering the shop. As the respondent sold the margarine, he scooped it from the tubs for the purpose of delivering it to the purchasers. The tubs were not branded with the word "margarine," and it was contended that Section 6 of the Margarine Act, 1887, required that they should be so branded, as the tub was a package within the meaning of that section which provides that "Every person dealing in margarine in the manner described in the preceding section shall conform to the following regulations: Every package, whether open or closed, and containing margarine, shall be branded or durably marked 'margarine' on the top, bottom, and sides, in printed capital letters, not less than three-quarters of an inch square."

The magistrate held that the tubs were not packages, and dismissed the complaint.

Bartley appeared for the appellant. The respondent did not appear. The Court allowed the appeal.

Alverstone, L.C.J.—Knowing that the real object of the Margarine Act, 1887, was that people when they asked for butter should get butter, and when they asked for margarine should get margarine, and know it, I think it is quite plain that the case should go back to the magistrate with a direction to convict.

Kennedy and **Phillimore**, JJ. concurred.

October 25th and 26th, 1904.

BEFORE LAWRENCE, J., AND A SPECIAL JURY.

WANKLYN AND COOPER *v.* BIGGS.

Libel—System of Sewage Purification—Fair comment.

This was an action for damages for libel brought against the editor of the *Contract Journal and Specification Record*, for an alleged libel published in that journal in regard to a process for the æration and purification of sewage, generally known as the Wanklyn-Cooper process, of which the plaintiffs are the proprietors and patentees. It appeared that in March, 1903, the plaintiffs granted to the Urban District Council of Leek, in Staffordshire, a licence to use their process for the purification of sewage matter flowing from the southern drainage district of the Council. On October 21st, 1903, the defendant published in the above journal the following, which was complained of as a libel: "Leek.—The surveyor has received instructions to consider the question of sewage disposal in the south district, in order to meet the requirements of the County Council with regard to the quality of the effluent. The Council have abandoned the Wanklyn-Cooper method of treating the sewage because of its failure to produce a satisfactory effluent." The plaintiffs complained that by reason of the alleged libel they were prevented from granting further licences, and so obtaining profit out of their invention. The defendant pleaded that there was no libel; that in so far as the words consisted of allegations of fact they were true, and in so far as they contained expressions of opinion they were fair comment on a matter of public interest.

Mr. Cyril Dodd, K.C., and *Mr. C. H. Swanton* appeared for the plaintiffs; *Mr. Lawson Walton, K.C.*, and *Mr. Norman Craig* for the defendant.

The plaintiff, Professor Wanklyn, gave evidence refuting the alleged libel, and he was subjected to a long cross-examination to show that what the defendant had published was true. At the close of the plaintiffs' case the jury stopped the case, stating that they thought it was fair comment, and judgment was entered for the defendant.

October 31st, November 1st and 2nd, 1904.

BEFORE GRANTHAM, J., AND A SPECIAL JURY.

FROST *v.* THE AYLESBURY DAIRY CO., LTD.

Infected Milk—Sale of—Breach of Warranty—Damages.

A dairy company were held liable to pay damages occasioned to the plaintiff by reason of the death of his wife from typhoid fever, which fever the jury found to have been caused by the consumption of infected milk supplied by the Company, the judge holding that the Company warranted the milk to be fit for human food.

This was an action brought by Mr. Ralph Frost, formerly residing at West Ealing, to recover damages from the defendant company for breach of warranty in respect of certain milk supplied by the defendants to the plaintiff. The defendants denied that there had been any breach of warranty.

Duke, K.C., and *Holman-Gregory* were for the plaintiff; and *Lawson Walton, K.C.*, *Macmorran, K.C.*, and *W. W. Mackenzie* were for the defendants.

It appeared that the Aylesbury Dairy Company had supplied the plaintiff with milk during the summer of 1903. In July of that year the milk which was supplied came from a farm at Bourton, near Shrivenham, in Berkshire. The milk in question, according to the plaintiff's case, was infected with the germs of typhoid fever, with the result that the plaintiff's wife contracted that disease and died of it on August 10th. It appeared that a son of the dairy woman at the farm from which the milk came had a virulent form of typhoid fever, and died; and after this milk was supplied in Ealing there were twenty-three cases of typhoid. The Aylesbury Dairy Company had contracts with various farmers, principally in the South of England, for the supply of milk; and the Company guaranteed that every farm from which milk came should be visited at intervals by the Medical Officer of Health in the district, and the health of the farm labourers, the character of the water on the farm, and the health of the cows should be carefully investigated, and samples of the milk taken and tested. These precautions, according to the plaintiff's case, were not taken, and in consequence his wife caught typhoid fever and died; and he sought to recover damages from the defendants for supplying milk which was not fit for human consumption.

Mr. Frost, the plaintiff, said that in the spring and summer of 1903 his wife, under doctor's orders, had to consume a quantity of milk. He purchased his milk from the Eealing depot of the Aylesbury Dairy Company. On July 17th his wife was taken ill, and her illness was diagnosed as typhoid fever on July 31st, and she died on August 10th. The expense to which he had been put owing to the illness and death of his wife amounted to £106.

Evidence was given of a number of other cases of typhoid fever in Ealing, and that the persons affected had consumed milk from the defendant Company.

Dr. Patten, the Medical Officer of Health for Ealing, said he received notifications of the cases of typhoid which occurred there in July, 1903. After inquiring into the circumstances of the outbreak, he came to the conclusion that its cause was the milk supply.

Cross-examined.—He was of opinion that the infection in the cases brought to his notice had arisen in the first ten days of July. There was a case of typhoid notified to him which began at the end of June, but he believed that to be an imported case. In Acton a number of cases of typhoid were reported, and only a few of the persons infected were consumers of the defendants' milk. Acton and Ealing had the same water supply, but he did not think that flooding had anything to do with the outbreak. It was usual in the case of a milk epidemic that the largest proportion of patients were children. In this case there were only a few children. There were a number of domestic servants, who were possibly more frequently in contact with the drains of the house.

Dr. Macnamara, of Shrivenham, Berkshire, said that on July 25th, 1903, he was called in to see a farm lad at Keevil's farm, at Bourton, and found him suffering from typhoid fever. It was a bad case, and the boy died. Another farm hand also had the disease, but recovered. In May of this year there were two cases on the farm.

Mr. William Ainsworth, a surveyor, of Swindon, said he inspected Keevil's farm, and he found in the dairy a pump near a tank where the dairy utensils were washed, but he was told that the water from the pump was not used for washing purposes. The water used for cooling was pumped up from a well close by.

Lawson Walton, K.C., in opening the defendants' case, pointed out that over 2,000 persons in Ealing drank this milk, and out of these only twenty-three persons caught typhoid fever. This milk was also supplied in Hanwell and the surrounding districts, and if this milk was the source of the epidemic, it would follow that other districts besides Ealing would be equally affected. In Richmond, where this milk was drunk, there was not a single case. Counsel contended that the outbreak was due to other causes, and he would prove that many of the characteristics of milk epidemic were absent in this case, and that numbers of persons who consumed it suffered no harm.

Mr. J. A. Hattersley, managing director of the defendant Company, said that up to the end of July, 1903, the milk which went to their Ealing depot came from Keevil's farm, at Bourton. Mr. Keevil had supplied milk to the Company for more than twenty-five years. Witness had visited his farm, he thought, in 1897, in company with Dr. Streeten, for the purpose of investigating the water supply. The result was that it was arranged that the water for washing and cooling should be brought from a spring three miles away. He received from time to time reports as to the state of the farm, and the health of the labourers, etc. He received a notification of a case of typhoid at Ealing from the Sanitary Inspector on July 25th. Immediately after that he stopped Keevil's milk from being supplied to the Company. He also gave instructions for the farm at Bourton to be inspected and reported on.

Cross-examined: The Medical Officer of Health for Acton also communicated with him in regard to his milk. The Sanitary Authorities said that some of the people who had typhoid used the Company's milk, and witness was asked to stop the supply. Dr. Streeten advised that the water supply on the farm should not be used for the purpose of washing or cooling. The water in the district was not good.

Dr. F. E. Streeten, Medical Officer of Health for Swindon, said he had periodically inspected farms from which the Aylesbury Dairy Company obtained milk, and among them Keevil's farm at Bourton. There had never been any case of typhoid in Bourton up till July, 1903. Keevil's farm was always in excellent condition and order. He had taken samples of the water used for washing the utensils and for cooling the milk, and sent them to the Company's analyst. This water was brought from the spring, three miles away. He was always told that the water from the wells at the farm was only used for flushing the floor. He received a telegram on July 28th, and in consequence went over to the farm, and found a boy suffering from typhoid fever. His mother was the dairy woman, whose duty it was to wash the utensils. He at once told her not to go back to the farm, and he ordered the milk supply to the Company to be stopped. On hearing of the outbreak at Ealing, and on considering the dates, he was of opinion that the cases at Ealing did not result from the case at Bourton, as they ran concurrently. He could not ascertain the cause of the farm boy's illness, but he did not think it was the milk at the farm. No milk from this farm had been supplied to the Aylesbury Company since July 28th, 1903.

Cross-examined.—He paid a monthly visit to Keevil's farm. He had condemned the Bourton water supply some time ago, and they had not yet got a proper supply. He thought about forty or fifty gallons of water a day would be used for washing and cooling. Germs of typhoid might have been disseminated through the farmyard by dust.

Dr. Sims Woodhead expressed his opinion that, if the outbreak had been due to the milk, there would have been a much higher percentage of cases. About 3,900 people had consumed the milk. He did not think the cases at Ealing could be connected with the case of the farm boy, as they ran concurrently.

Mr. Samuel Keevil, the farmer of Bourton, said that he kept 120 to

130 cows, and had sold milk to the Aylesbury Dairy Company since its formation. He had carried out the conditions of his contract with the Company. About fifteen hands were employed in dealing with milk. The water for cooling and washing came from Hinton spring, two and a half miles away, and was fetched daily in a tank containing 180 gallons. He was ordered not to use the water on the premises, and it was only employed in swilling down the floors. The churns were washed in London before coming down to the farm. The boy who died was the son of Mrs. Hatherall, his dairy woman, and was employed in the stables. He was not a milker, but was given permission to milk in order to learn. Witness did not think he had milked at all in July, 1903. Those of his hands who required milk bought it from him, and there was no case of typhoid amongst them.

Cross-examined by *Duke*: Witness lived at Upper Bourton, about three-quarters of a mile from the farm. Mrs. Hatherall had the superintendence of the dairy. Her son did try his hand at milking. Probably 200 gallons or more of water would be required daily for cooling the milk. He had a tank which held 1,000 gallons in which he stored water.

Mrs. Hatherall, the dairy woman at the farm at Bourton, said she had been there for twenty years, and it was her duty to keep the utensils clean. The water used all came from the spring. The water from the pump was used for swilling down the floors, and she had never used it for cleaning any of the dairy utensils. Her boy did not do any milking in July, 1903. She could not give any idea of the cause of her boy's typhoid fever.

Cross-examined: She and her family always drank the water from a pump in her garden. The water was bad, and frequently caused illness.

Mr. Macfadyen, Principal of the Royal Veterinary College, also gave evidence as to the regulations drawn up by him for the Company to distribute amongst the farmers supplying milk.

Dr. Simpson, Medical Officer of Health for Acton, gave evidence that in June, July, and August there were twenty-one cases of typhoid, and of those thirteen cases were at houses supplied by the Aylesbury Dairy Company.

After other evidence had been given, and after speeches by counsel in which counsel for the defence said that he would reserve his legal argument.

Grantham, J., in summing up, said the law was clear, that if a purveyor of food sold food which did cause injury, he was liable for damages in respect thereof. All the medical witnesses for the defence admitted there was a very suspicious case against the defendants. The water at the farm was notoriously bad. It was incredible that cows were allowed to be milked in such surroundings, and their milk sent to London.

The jury found a verdict for the plaintiff for £106, the amount claimed, and Grantham, J., entered judgment for that amount without giving the defendants an opportunity to argue the points of law as to their legal liability. Subsequently, on the application of counsel, and on his representing that the case involved difficult questions of law which had not been raised, the judge granted a stay of execution pending an appeal.

November 4th, 1904.

BEFORE LORD ALVERSTONE, L.C.J., KENNEDY AND RIDLEY, JJ.

HULL *v.* HORSNELL.

Sale of Food and Drugs Act, 1875, Section 3—Preserved Peas—Sulphate of Copper—Analyst's Certificate.

In order that a person may be convicted of an offence under Section 3 of the Sale of Food and Drugs Act, 1875, *the justices must find that the article of food by reason of the added ingredient is rendered injurious to health, and it is not enough if they merely find that the added ingredient is in itself injurious to health. An analyst's certificate is sufficient if it complies with the terms in the form given in the schedule, and need not state that the article is injurious to health.*

This was a case stated by justices for the opinion of the High Court, upon the hearing of an information against the appellant under Section 3 of the Sale of Food and Drugs Act, 1875. The information charged that the appellant, Hull, did on February 19th, 1904, unlawfully and wilfully sell to the respondent a certain article of food—to wit, bottled peas—which to the knowledge of the said Hull was mixed with a certain ingredient called sulphate of copper, which ingredient was injurious to health, contrary to the Sale of Food and Drugs Acts, 1875–99.

The certificate of the public analyst was as follows : " I, the undersigned public analyst for the administrative county of East Sussex, do hereby certify that I received from yourself on February 20th (per registered parcel post) a sample of bottled peas No. 14 for analysis (which then weighed about 4½ oz.), and have analysed the same, and declare the result of my analysis to be as follows : I am of opinion that the said sample is adulterated with sulphate of copper to the extent at least of 1·87 grains per lb. Observations : The copper salt has doubtless been added to improve the colour of the peas." The respondent proved that the bottle containing the peas bore the following label, " English Garden Peas. Colour preserved with a small quantity of Sulphate of Copper." On behalf of the appellant it was contended that the information did not disclose any offence under the Sale of Food and Drugs Act, because it did not allege that the admixture of the ingredient called sulphate of copper rendered the article of food—namely, the peas—injurious to health, but merely that the ingredient itself was injurious to health, and that, therefore, the information was bad in law. Section 3 of the above Act provides that no person shall sell any article of food mixed with any ingredient so as to render the article injurious to health. It was also contended on behalf of the appellant that the certificate of the public analyst did not disclose any offence, and was insufficient and did not comply with the requirements of the Sale of Food and Drugs Act.

The justices stated that they were of opinion that sulphate of copper, which was an ingredient in the peas, is injurious to health, and they therefore convicted the appellant, being of opinion that the ingredient necessarily rendered the whole article sold injurious to health. The questions for the opinion of the Court were : (1) Whether the information disclosed an offence under the Sale of Food and Drugs Act, and was valid in law ; (2) whether the public analyst's certificate was sufficient and valid in law ; (3) whether the justices were right in law in convicting the appellant.

Horace Avory, K.C., and *Bonsey* appeared for the appellant ; *Boxall, K.C.*, and *Henriques* for the respondent.

The LORD CHIEF JUSTICE, in delivering judgment, said that if the justices had convicted the appellant of an offence under Section 3 of the Sale of Food and Drugs Act, 1875, on the ground that the added ingredient —sulphate of copper—was injurious to health, and not on the ground that the peas, by reason of the addition of the sulphate of copper, were rendered injurious to health, he was clearly of opinion that the conviction would be wrong. He had no doubt that in order to constitute an offence under the second part of Section 3 the article of food sold must be found to be injurious to health. Speaking for himself, he thought that the justices had, in fact, found the article itself—namely, the peas—was injurious to health. As, however, there might be some doubt as to whether they had so found, he thought that the case ought to be sent back to them with instructions that if they had so found the conviction should stand, but if they had found not that the peas were injurious to health, but that the sulphate of copper was, the conviction should not stand.

As to the second point, namely, that the conviction could not stand because the certificate of the analyst was insufficient. It was contended that at the end of the finding the analyst should have added the words "which rendered the article injurious to health," since the certificate, as it stood, did not show on the face of it that any offence had been committed. He did not agree with that contention. The analyst could not know with what offence the person would be charged. In his opinion, a certificate was sufficient if it was one which was in accordance with the terms of the schedule, and set out the description of the goods sent for analysis, the weight and the other requirements of the schedule. The certificate in this case was sufficient.

Kennedy and **Ridley**, JJ., concurred.

CHANCERY DIVISION.

November 14th–17th, 1904.

BEFORE SWINFEN EADY, J.

JONES AND OTHERS *v.* CORPORATION OF WELSHPOOL.

Nuisance—Disposal of town refuse—Injunction—Public Health Acts.

A corporation who deposit town refuse on a field so as to cause a nuisance to adjoining owners will be restrained from so doing, and it is no defence that the acts were done under the Public Health Acts and without negligence.

This was an action to restrain the Corporation of Welshpool as Sanitary Authority, from tipping or depositing town refuse on a field belonging to the defendants at Erwfelin, Welshpool, so as to occasion a nuisance to the plaintiffs, who were the owners and occupiers of adjoining property, and from polluting a certain brook on their property. The plaintiffs alleged that the defendants had recently set up on the field a refuse heap on which they had caused and were still causing to be tipped or deposited by their scavengers or workmen the refuse of the town of Welshpool, consisting of the contents of dustbins, street sweepings, and other litter, muck, and filth, and largely composed of bones, broken food, and decaying animal and vegetable matter, which had been allowed to remain and accumulate on the field, thereby causing noxious and offensive smells and gases to arise and pass therefrom to and over the property of the plaintiffs and creating an intolerable nuisance to and injuriously affecting the health and comfort of the plaintiffs and other persons dwelling in their said respective residences. They also complained that a flow of foul water issued out of the heap and discharged itself into a brook on the plaintiffs' lands. The defendants alleged that, as the sanitary authority for the town of Welshpool, they acquired the field for the purpose of depositing thereon, and had since from time to time deposited thereon, the house and other refuse of the town in pursuance of the powers and duties imposed upon them in that behalf by the Public Health Act, 1875, and that the field was the most convenient place for making such deposit, and in acquiring the field and in depositing thereon the refuse the defendant had acted in good faith and without negligence.

Eve, K.C., and *G. F. Hart* appeared for the plaintiffs; and *Macnaghten, K.C.*, and *Mark Romer* for the defendants.

MR. JUSTICE SWINFEN EADY, in giving judgment, said that the object of the action was to obtain an injunction for an alleged nuisance, and the question he had to determine was, nuisance or no nuisance. The conclusion at which he arrived was that the refuse heap did occasion a nuisance to the plaintiffs, and that the area of its operation was not confined as was contended by the defendants, to 100 yards from the heap, but extended beyond that distance. Part of the land which had been purchased by one of the plaintiffs was actually contiguous to the land on which the heap was, and it was clear that he would be unable to build upon this land except at a considerable distance from the heap. There was no doubt that the water in the brook in question was seriously polluted and injurious to cattle, and in his Lordship's judgment the cause of this pollution was the heap. He would therefore grant an injunction in the following terms: "Perpetual injunction to restrain defendants, their workmen, servants and agents from tipping or depositing or causing or permitting to be tipped or deposited upon the Erwfelin field any bones, animal or vegetable matter, or other town litter, muck, filth, or refuse, so as to cause or occasion any nuisance to the plaintiffs or any of them, and also from causing or permitting any foul water or water impregnated or contaminated with noxious, deleterious, or poisonous matter to flow or be discharged from any such deposit as aforesaid on the said field into or upon the plaintiffs' property in the pleadings mentioned or any part thereof, or into or down the brook or watercourse mentioned in the pleadings. The defendants undertaking within fourteen days from this date to cover with road scrapings or earth or otherwise render innocuous all such portions of the heap as have not already been so covered, and in like manner to effectually cover up any further material as and when the same is deposited, suspend the operation of the injunction for three months. Defendants to pay plaintiff damages £20 and costs.

SELLING MUSSELS UNFIT FOR FOOD.—At Southend-on-Sea Police Court, on Nov. 8th, a fisherman of Shoeburyness was summoned by the Port Sanitary Authority of London for selling a quantity of mussels that were unfit for human food. Professor Klein said the samples of mussels were dirty and covered with slime, 80 per cent containing a very large quantity of sewage organisms. They were unfit for human food. He had examined samples of water from the spot where the mussels were taken, and found them polluted. The defendant said he had lived in the locality for thirty years, gathering mussels for ten years from the pier and foreshore, and by that means obtaining his livelihood. So far as he knew there had never been a case of illness traced to the mussels he had sold, and he and his son had eaten them, raw and cooked, without ill-effect, all their lives. He was fined £1 and 4s. costs.

PRACTICAL HYGIENE FOR SCHOOL TEACHERS.—Principal E. H. Griffiths, F.R.S., is delivering a course of lectures on practical hygiene to about 100 teachers from the county of Glamorgan. Dr. Savage is conducting a similar course at Colchester.

REVIEWS.

Bacteriology and the Public Health. By George Newman, M.D., F.R.S.E., D.P.H., M.O.H. of the Metropolitan Borough of Finsbury, etc. Illustrated. 3rd edition. 497 pages. Price 21s. net. London: John Murray, 1904.

Though nominally a third edition of *Bacteria in relation to the Economy of Nature, Industrial Processes, and the Public Health*, this is, speaking generally, a new book. Several new chapters have been added, notably one on tuberculosis, and the whole has been enlarged and revised. There are in fact 100 more pages, and those of larger size than the second edition contains. We have spoken well of the previous editions, but this new edition is a great advance on its predecessors. It is more practical, better arranged both in method and style, and is thoroughly well up-to-date in every respect but one, the leaves are uncut. Probably the publisher is responsible for this defect, to which we have drawn attention on previous occasions, but evidently without good effect. *Bacteriology and the Public Health* is a work to be thoroughly recommended as a sound and safe guide.

Sanitary Measures in India.—The report on sanitary measures in India in 1902–03 has been published as a Blue-book [Vol. XXXVI., Cd. 2298]. It contains chapters on the health of the European and native troops, on the health of prisoners in jails, and on the health of the general population; it also contains chapters on vaccination, on medical institutions, including medical schools and lunatic asylums, and a chapter on sanitary works. Appended to the report are abstracts of reports by the three principal sanitary commissioners in India, and memoranda by the Army Sanitary Commission in England reviewing the several sanitary reports for India.

PROCEEDINGS OF THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

Founded 1856. Reconstituted, 1881. Incorporated, 1891.

North-Western Branch.—An ordinary meeting of the Branch was held at the Chemical Club, Victoria Hotel, Manchester, on Friday the 16th December. Present: Dr. J. B. Wilkinson, President, in the Chair, Drs. Garstang, Vacher, Sergeant, Wheatley, Graham, Fisher, Greenwood, Laird, Brindley, Barlow, Hitchon, Henry, Pringle, Forbes, Berry, Kenneth Fraser, Knyvett Gordon, and M. Young, with Miles Arnold and Basil Rhodes as visitors.

Articles of Association.—It was resolved that the matter come up for consideration at the next meeting of the Branch.

The Hon. Sec. pointed out that the date fixed for the April meeting, 1905, was the 21st, which was Good Friday. It was resolved that the meeting in this month take place on the 14th April.

Dr. Knyvett Gordon, Medical Superintendent, Monsall Fever Hospital, read a paper on "Internal Administration of Isolation Hospitals."

A hearty vote of thanks was accorded to Dr. Gordon for his paper; Drs. Vacher, Wheatley, Barlow, and Greenwood taking part in the discussion.

CURRENT PUBLIC HEALTH LITERATURE.

(May.) Morbid Anatomy and Etiology of Avian Tuberculosis. Veranus A. Moore.

(August.) Studies on the Tuberculin Reaction. E. L. Trudeau, E. R. Baldwin and H. M. Kinghorn.

The Production of Hemolytic Serum by Injecting Animals with Different Constituents of Erythrocytes. P. A. Levene.

Action of Pepsin Digestion on Tuberculin. H. M. Kinghorn.

Studies on Tuberculous Serums and the Bacteriolysis of Bacillus Tuberculosis. E. R. Baldwin.

Antituberculin or Tuberculin—Precipitin Serums. E. R. Baldwin.

Differences in Precipitins Produced by Tubercle Bacilli. E. R. Baldwin.

Effect of Bacillus Mycoides XIII on Local Tuberculosis. H. M. Kinghorn.

The Biochemistry of the Bacillus Tuberculosis. P. A. Levene.

American Medicine, Philadelphia.

(May 7.) The Diarrhœas of Infancy and Early Childhood. Thomas M. Rotch.

Efficiency of Local Treatment as a Factor in the Cure of Laryngeal Tuberculosis. Ross H. Skillern.

Modification of Existing Methods of Staining Flagella. O. P. Johnston and W. B. Mack.

(June 18.) The Antiseptic Treatment of Small-pox. S. M. Wilson. The antiseptic method of small-pox treatment consists in the daily use of the scrub bath. It is referred to in some recent text-books, but is not advocated generally because of its painful nature after vesiculation has occurred. Thoroughly used before the primary papules develop, it appears to prevent vesiculation. If instituted late, it does away to a great extent with the repulsive appearance and foul odour characteristic of cases treated without this means. If the patient is not seen until vesiculation has commenced, the summits of the vesicles must be punctured, compresses of full strength hydrogen peroxide solution applied, and these followed by a mask wet with some antiseptic. A solution of mercury bichloride—1 part in 1,500 parts of water—gives good results. This need remain in place for a few minutes only. The peroxide followed by the mask, may be used several times daily, if desired, and seems to comfort the patient as well as promote desquamation. In two unvaccinated young girls, where vesiculation was commenced when the patients were first seen, the scrubbing, combined with puncture of the vesicles, was very successful. Where it was applied thoroughly the vesicles, though large and numerous, left only faint traces, almost imperceptible on close examination. In other parts, not so thoroughly treated, well-marked pitting occurred. Neither child was seriously sick after the seventh day.

(July 30.) Treatment and Control of the Tuberculous Patient in the Home. Lawrence F. Folick.

Medical News (New York).

(April 2.) Specific Therapy of Tuberculosis, and Vaccination against the Disease. Eduardo Maragliano.

Home Treatment of the Tuberculous "Is Just As Good"—But It Is Not. Henry Levien. (He thinks home treatment fails through lack of proper hygienic control, the indulgence of friends, and the want of facilities to meet the conditions. It is our duty, he says, to have the public impressed with the importance of fresh air, nourishing food, and above all of rigid supervision by physicians and nurses. These needs are best met by establishing sanatoria in sufficient number to supply the demands. The home treatment as a treatment is meaningless and a step backward, and may prove a menace to consumptives, and mislead the public mind in believing it to be a new treatment. (*See also New York Med. Jour.* April 2.

(April 9.) Street Car Sanitation. Geo. A. Soper. Report of a Committee appointed by the Merchants' Association of New York.

(May 7.) Influence of Bovine Tuberculosis on Human Health. M. P. Ravenal.

(June 4.) Some Considerations on Infection and Immunity. Thomas Satterthwaite.

Notes on the Epidemic of Cerebrospinal Meningitis. Henry D. Chapin.

Clinical Features of Cerebrospinal Meningitis, or Cerebrospinal Fever of the Epidemic Type. Henry Koplik.

A Plea for the Organization of a "Society of Sanitary and Moral Prophylaxis." Prince A. Morrow.

Scurvy in Infants. William F. Cheney.

(August 20.) Bacteruria, with special reference to Coli Bacilluria. Arthur R. Elliott.

(September 17.) Polyuria in Typhoid Fever. M. H. Fussell, H. S. Carmany, and H. Hudson.

American Journal of the Medical Sciences.

(August.) A Study of the Tubercle Bacilli isolated from three cases of Tuberculosis of the Mesenteric Lymph Nodes. Theobald Smith. (From their length, degree of virulence, etc., he decided that these cases of presumably food infection, were not so, and concludes that the bacilli were of strictly human origin.)

(September) Borated Food and Kidney Lesions. Chas. Harrington.

University of Pennsylvania Medical Bulletin (Philadelphia).

(July-August.) Immunization Against Rattlesnake Venom. Hideyo Noguchi.

Tuberculous Pericarditis. Based on a study of 7,219 autopsies in Philadelphia Hospitals. George W. Norris.

Studies on Immunity Against Streptococci. D. H. Bergey.

Study of Formaldehyde in Milk; Its Germicidal Action and the Gradual Disappearance of it from Milk. D. Rivas.

Cellular and Bacterial Content of Cow's Milk at Different Periods of Lactation. D. H. Bergey.

Sanitary Supervision of the Collection and Marketing of Milk. D. H. Bergey.

Chronic Poisoning from Bisulphide of Carbon. Henry D. Jump and John M. Cruice.

Bulletin de l'Académie de Medecine (Paris).

(No. 11.) Hygiene of Infancy. Morel. (The mayor of Villiers-le-Duc has issued regulations in regard to the hygiene of infancy; he is a native of the small place and a physician, and his regulations are not all legally enacted, but are more in the nature of advice which his position renders authoritative. The mortality has been reduced to zero. Every child born in the community during the last ten years is alive and well to-day. The mortality had been 20 to 30·8 per cent. of the births during the previous decades for a century, with the exception of a single decade, during which the present mayor's father—likewise a physician—had been the incumbent, and devoted much attention to infantile hygiene. The regulations include one to the effect that every needy pregnant woman, married or not, must inform the mayor of her condition before the seventh month, and state the name of the midwife whom she wishes to have attend her. The midwife is then sent by the mayor to examine the woman, to ascertain that there is no albuminuria, no fœtal or maternal dystocia, nor vicious presentation. She is paid 4 francs from the public funds for each visit. If the midwife finds anything abnormal the mayor is notified, and he sends a physician selected by the pregnant woman, to take charge of the case. Every parturient assisted by the community receives 1 franc a day during ten days after the confinement, if she remains in bed. This amount is paid to her at the end of the ten days. If she gets up before this limit she forfeits this sum. Other regulations specify points in regard to the feeding, fortnightly weighing of the infant. etc., and the promise of a reward of 2 francs a month which is paid to every woman who has brought up a child to the age of one year in good condition, breast or bottle fed. This sum is paid to her at that time, computed for every month during the year that the infant has been in her charge.)

NEW PUBLICATIONS RECEIVED.

Bacteriology and the Public Health. By George Newman, M.D., F.R.S.E., D.P.H., Medical Officer of Health of the Metropolitan Borough of Finsbury. Third Edition. Pp. 488 + ix. Price 21/- net. John Murray, 50A, Albemarle Street, London, W.

Aids to the Study of Sanitary Law. By Harry Critchley, M.A., M.D., D.P.H. Pp. 79. Price 2/6. Baillière, Tindall & Cox, 8, Henrietta Street, Covent Garden, London, W.C.

The Ambulance in Civil Life and the Proceedings of the Metropolitan Street Ambulance Association. By Reginald Harrison, F.R.C.S. Pp. 70. John Bale, Sons & Danielsson, Ltd., 83-89, Great Titchfield Street, Oxford Street, London, W.

Infant Mortality: A Series of Articles in the *Times*, published on Sept. 17 and 22, Nov. 1 and 9, and leader Nov. 10, 1904.

First Report of the Wellcome Research Laboratories at the Gordon Memorial College, Kartoum. By the Director, Henry Balfour, M.D., B.Sc., etc. Pp. 88, with Coloured Plates. Sudan Government, Kartoum.

Who's Who for 1905, with which is incorporated *Men and Women of the Time*. Price 7/6 net. (The new volume contains over 17,000 biographies.)

The Englishwoman's Year Book and Directory, 1905. Edited by Emily Janes. Seventh year of new issue, revised, enlarged, and remodelled. Price 2/6 net.

Who's Who Year-Book, 1905. Price 1/- net.

These three works are published by Adam and Charles Black, Soho Square, London, W.

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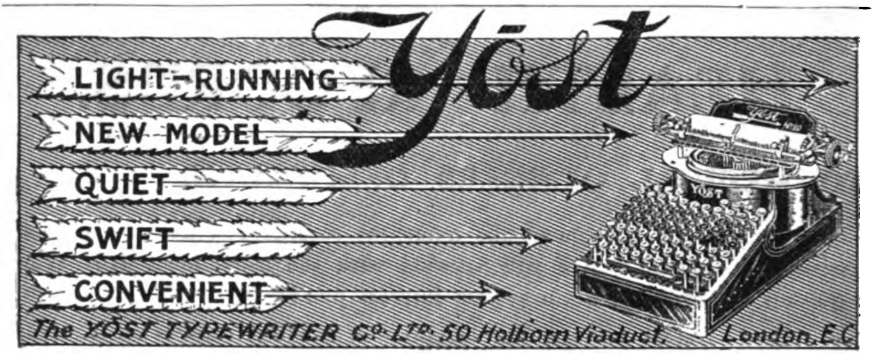
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SPECIAL NOTICES FOR THE MONTH.

MEETINGS OF THE SOCIETY.

AT 9, ADELPHI TERRACE, 7.30 P.M.

*FRIDAY, January 6th, 1905. "The Report of the Inter-Departmental Committee on Physical Deterioration," by Sir Lauder Brunton, F.R.S.

Friday, February 10th, 1905. "The Reform of the Milk Supply," by Dr. G. F. McCleary, M.O.H., Battersea.

Friday, March 10th, 1905. "Disinfection of rooms—a comparative study," by Professor Delépine.

*Friday, April 14th, 1905. "The administration of the Midwives Act," by Dr. G. H. Fosbroke.

The January meeting is on the first Friday in the month.

* The Council meets on these dates.

NORTH-WESTERN BRANCH.

January 20th, 1905. "A Pure Milk Supply," by Dr. A. J. Laird.

February 17th.

March 17th. "School Sanitation and the Duties of School Medical Officers." by Dr. A. Greenwood.

April 14th. "The Midwives' Act," by Dr. E. Sergeant.

May 19th. "The Influence of Privy-Middens and Water-Closets on the Annual Epidemics of Zymotic Diarrhœa and Typhoid Fever," by Dr. A. W. Martin.

June 16th. "Discussion on the Housing of the Working Classes in Rural Districts." Opened by Dr. T. W. H. Garstang.

WEST OF ENGLAND AND SOUTH WALES BRANCH.

January 19th, 1905, at Bath. Visit to Bath Climatic Stations. Paper by Dr. Symons: "Notes on Meteorology."

February 16th, at Newport. 1.—The action of the Merthyr U.D.C. under the Housing of the Working Classes Acts, with Plans of Houses built; Dr. D. J. Thomas. 2.—Improvements desirable in the construction and administration of Slaughter Houses; Dr. J. Howard Jones.

March 16th, at Bristol. Papers by Dr. D. S. Davies, and Professor Kent (Professor of Bacteriology, University College, Bristol).

Continued on p. xii.

EPSOM COLLEGE.—Mrs. Skinner, widow of the late Medical Officer of Health for Willesden, is a candidate for a pension. Subscribers to this Fund are invited to give their votes in her favour.

DINNER TO SIR SHIRLEY F. MURPHY.—The Metropolitan Branch of the Society is to entertain Sir Shirley and Lady Murphy to dinner on January 27th. Other members of the Society and their friends desiring to be present on the occasion will be welcomed. Applications for tickets to be made to the Branch Secretary, Dr. Priestley, 333, Kennington Road, London, S.E.

THE SANITARY INSPECTORS' EXAMINATION BOARD.—An Examination for Certificates of qualification for appointment of Sanitary Inspector, or Inspector of Nuisances, under Section 108 (2) (d) of the Public Health (London) Act, 1891, will be held in London on Tuesday the 17th January, 1905, and the four following days.

Particulars will be forwarded on application to the Honorary Secretary, The Sanitary Inspectors' Examination Board, 1, Adelaide Buildings, London Bridge, London.

BRITISH ADVERTISEMENT CHALLENGED IN GERMAN LAW COURT; CYLLIN *v.* CREOLIN.—During the course of the past year, Jeyes' Sanitary Compounds Co., of 64, Cannon Street, E.C., have been advertising in certain German newspapers that Creolin sold by Mr. William Pearson was not of their manufacture, and that the fluid which they now make (Cyllin) is four times the strength of that which they formerly sent to Germany as "Creolin" while it was free from Carbolic Acid.

In consequence of these statements Mr. Pearson took action against Messrs. Jeyes' in the District Court of Hamburg on the grounds of unfair competition. The Court referred the matter to the Hygienic Institute of the city, the questions submitted being: (*a*) Whether the defendants have succeeded, by means of experiments extending over many years, in quadrupling the bacteria-destroying properties of the fluid in question; (*b*) Whether Cyllin is eleven times stronger than pure Carbolic Acid.

Dr. Kister, of the Hygienic Institute, was deputed to examine a series of samples, and submitted an exhaustive report embodying tables showing the results of bacteriological experiments with "Cyllin," "Creolin," "Jeyes' Perfect Purifier," "Jeyes' Fluid" and Carbolic Acid, by British and German methods, typhoid culture being used. He answered questions (*a*) and (*b*) in the affirmative. The District Judge and two Commercial Judges have recently (Oct. 3rd, 1904) given their decision in the case. They dismissed the plaintiff's claim and ordered him to pay five-sixths of the costs.

Continued on p. xiii.

In their grounds for the judgment, the judges rely upon Dr. Kister's report, which was in favour of the defendants, and they reject the plaintiff's allegations that the defendants had added poisonous admixture to "Cyllin." We are also informed that Prof. Klein has worked out the co-efficient of Cyllin for Staphylococcus pyogenes aureus and that it is 9·37.

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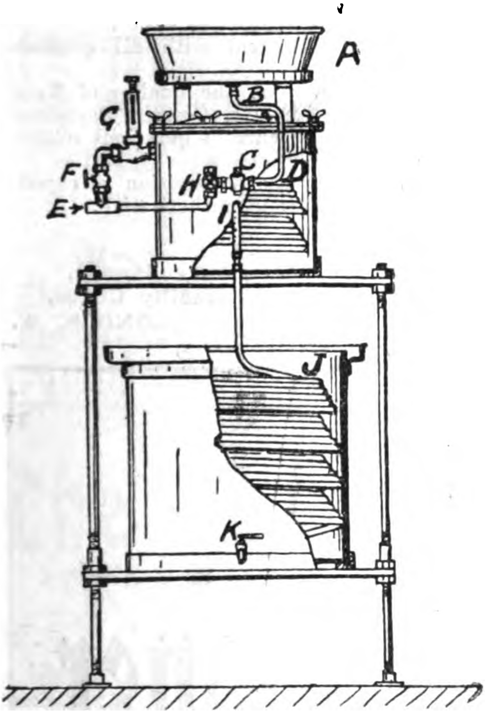

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CONTENTS.

No. 5, Vol. XVII., February, 1905.

PAGE

EDITORIAL—

THE VIRULENCE OF PSEUDO-DIPHTHERIA BACILLI - - 271

SPECIAL ARTICLES—

THE REPORT OF THE INTER-DEPARTMENTAL COMMITTEE ON PHYSICAL DEGENERATION (*Sir Lauder Brunton, M.D., LL.D., D.Sc., F.R.C.P., F.R.S.*) - - - - - 274

ALLEGED PHYSICAL DEGENERATION IN TOWNS (*Arthur Newsholme, M.D., F.R.C.P.*) 293

PAGE

SPECIAL ARTICLES (*continued*)—

THE SUPPOSED DETERIORATION AND DECREASE OF OUR POPULATION IN RELATION TO OVERCROWDING IN HOUSES (*Henry E. Armstrong, D.Hy.*) 301

DO INFANT SCHOOLS IMPROVE THE MENTAL AND PHYSICAL CONDITION OF THE CHILDREN (*Daniel Jackson, M.D., J.P.*) 311

"UNOFFICIAL SANITARY WORK" (*A. S. Norman, L.R.C.P., M.R.C.S., D.P.H.*) - - 314

ANNOTATIONS—

HYGIENIC REGULATIONS FOR POST OFFICES - - - 273

(Continued on Page vii.)

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CONTENTS—*continued.*

ANNOTATIONS (*continued*)—

PAGE

The Influence of the Tanning Process upon Anthrax Spores - - 273

The Housing of the Working Classes Acts, 1890 to 1903 - - - - - - 310

Schools or Nurseries? - 310

Public Health Bill - - 321

Birmingham & Consumption 323

Small-Pox and Vaccination 323

Statistics for 1904 - - 329

LAW REPORTS—

The Earl of Harrington and Others *v.* the Corporation of Derby - - - 324

Appeal to the London County Council [Public Health (London) Act, Section 41 (3)]. - - - - 327

CORRESPONDENCE—

PAGE

Dried Milk - - - - 328

Poisoning by Hydrogen Compounds in Workshops - 328

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH, THE—

General Meeting - - 334

Midland Branch - - - 336

Northern Branch - - 337

Southern Branch - - 337

Annual Dinner of the Metropolitan Branch - 337

CURRENT PUBLIC HEALTH LITERATURE - - - 340

NOTICES - - - - xi-xiii

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PUBLIC HEALTH:

The Journal of the Incorporated Society of
Medical Officers of Health.

VOL. XVII. No. 5. FEBRUARY, 1905

EDITORIAL.

THE VIRULENCE OF PSEUDO-DIPHTHERIA BACILLI.

THE question of the relationship between the bacillus of diphtheria and the so-called pseudo-diphtheria bacillus has been the subject of much and constant controversy ever since 1887, when the "pseudo-diphtheria bacillus" was first described by Löffler and by Hoffmann-Wellenhof. There are some who have asserted that the pseudo-bacillus is at all times non-virulent, and contend that if symptoms of paralysis or heart failure occur in cases which have yielded only the pseudo-bacillus, then the presence of the Löffler must have been overlooked. It has been shown* that there are several organisms included under the heading of pseudo-bacilli, and we are inclined to the opinion that it is the failure to recognize this that has led to the divergence of opinions which have been formed by clinicians and laboratory workers. We are confirmed in this view by a consideration of the recent work of Spronek, E. H. Ruediger, and Alice Hamilton,† which appears to make the position somewhat more clear than it has previously been. Hamilton, in a careful study of a variety of pseudo-diphtheria bacilli, isolated principally from the throats of scarlet fever, measles, and diphtheria patients, shows that the loosely constituted group of pseudo-diphtheria bacilli contains organisms that differ fundamentally, because a serum produced by immunization with one member of the group protects against some, but not against all other members of this same group. Hence the term pseudo-diphtheria has in the past been applied not only to organisms that are diametrically different from the diphtheria bacillus, but also differ radically among themselves. It has been found that there exist virulent pseudo-diphtheria bacilli the pathogenic effects of which cannot be neutralized with diphtheria antitoxin. Indeed, the mode of pathogenic action of certain of the pseudo-bacilli appears to be radically different from that of the diphtheria bacillus, which is a typical toxicogenic germ, the infection remaining local while the toxins are absorbed, whereas some pseudo-bacilli appear to cause a general invasion of the blood.

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* *Public Health*, vol. xv. page 561, June.

† *The Journal of Infectious Diseases*, 1904, vol. v. pages 690, 713.

The contention that the group contains organisms more or less virulent for man has been exemplified by outbreaks recorded by many Medical Officers of Health in this country, *e.g.* Drs. S. Davies and J. C. Heaven of Bristol,* J. Priestley, R. S. Davies, and R. K. Brown.† It is instructive to read the account of these in the light of Hamilton's description of her cases. The following may be cited as illustrative of the series:—

"No. 11 was isolated from the throat of a child who, without appearing very ill, had swollen tonsils covered with a delicate, veil-like exudate. Smears from the throat showed typical diphtheria bacilli, and 2000 units of antitoxin were administered. At this time the child was playing about the room, but soon after the injection of antitoxin his temperature rose, he became markedly worse, and died in less than twenty-four hours. Pure cultures from the throat on Löffler's serum showed short and long, straight and curved rods with Neisser granules, which however were of narrower diameter than the rods. On all culture media the growth resembled that of a diphtheria bacillus. Less than 1 per cent of the body-weight of a broth culture killed guinea-pigs in twenty-four to forty-eight hours, producing a general bacteriemia and no change in the adrenals. Diphtheria antitoxin exerted no protective influence; indeed, the animals injected with it died somewhat earlier than those without (six to eight hours). On the other hand, the Ruediger serum [a serum produced by immunization with a virulent pseudo-bacillus] did protect, so that we have here again a virulent pseudo-diphtheria bacillus . . ."

Hamilton concludes that cases like this teach the lesson that every instance of apparent failure of diphtheria antitoxin, whenever possible, should be subjected to rigid bacteriological study with diversified animal experiments. Such cases should not be explained off-hand as due to mixed pyogenic streptococcal infection; this may explain many such cases, but in all probability it cannot account for all. A consideration of such cases leads us to approve of the

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***Public Health*, June, 1903, vol. xv. page 516; *Journal of State Medicine*, October, 1903.

† *Public Health*, July, vol. xv. page 567.

opinion of Drs. D. S. Davies and J. C. Heaven,* that it is neither justifiable nor safe to dogmatically assert that under no conditions can pseudo-diphtheria bacilli be harmful, or that they may in all instances be safely disregarded. Fortunately, they are generally non-virulent; but if it should prove true that the general clinical picture of diphtheria may be caused by bacilli other than the true diphtheria bacilli, and consequently not prove amenable to diphtheria antitoxic serum, then this, of course, would not in any way reflect on the efficacy of this serum, which in the nature of things cannot be expected to have any curative effect on infections of a radically different nature than the one we are wont to call true diphtheria. Under such circumstances we must look to bacteriologists to afford practitioners prompt indication of the existence of virulent organisms and to furnish proper specific treatment to counteract its pathogenic action.

WE REGRET to note the death of Mr. Edward Tidman, C.E., for many years Secretary of the Sanitary Inspectors' Association.

HYGIENIC REGULATIONS FOR POST OFFICES.—The French Government has issued orders for an inquiry into the condition of all its post offices. Dry sweeping and sprinkling with water are strictly forbidden, while rooms with tiled floors are to be flushed with water every day. Parquet floors are every day to be wiped over with hot turpentine, sprinkled with damp sand, and swept. Once a week floors, whether tiled or parquet, are to be sprinkled with a disinfectant. Tables, desks, and telephone apparatus are to be wiped with cloths dipped in a similar disinfectant. Sanitary appliances are to be kept perfectly clean by frequent flushing, and, if necessary, by sprinkling with turpentine. Placing spittoons in the rooms is strictly forbidden, and those which are already in use are to be removed immediately. The rooms are to be ventilated as freely as possible, especially in the absence of the staff.

THE INFLUENCE OF THE TANNING PROCESS UPON ANTHRAX SPORES (*Inaug. Diss.*, *Univ. Wurzburg*: *Exp. Stat. Rec.*)—H. Kessler has made a study of the effect of the various chemicals and processes used in tanning leather upon anthrax spores which happen to be present upon the skin. As a result of these investigations it was found that chemicals and processes in common use cannot be said to destroy all of the anthrax spores upon the skins. While a portion of the spores are induced to germinate during the softening process to which the skins are subjected, other spores are formed during the same process, so that future treatment must be calculated to destroy spores if the skins are to be rendered perfectly sterile. Solutions of caustic lime were found insufficient to destroy anthrax spores during the period of time occupied by the tanning process. In some experiments it was found that the spores withstood these solutions for periods of 12 to 17 days. The spores are easily destroyed by a 1 per cent solution of formalin if allowed to operate for a period of 48 hours.

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* *Brit. Med. Jour.*, November 26, 1904, page 1492.

THE REPORT OF THE INTER-DEPARTMENTAL COMMITTEE ON PHYSICAL DEGENERATION.

By Sir LAUDER BRUNTON, M.D., LL.D., D.Sc., F.R.C.P., F.R.S.

Mr. President and Gentlemen,—I thank you for the honour you have done me in asking me to open the discussion on the report of the Physical Deterioration Committee. There is no more fitting assembly in which to do it than this, because the evils which this report acknowledges must be in great part remedied by the efforts of two bodies, namely Medical Officers of Health and school teachers, and the combined efforts of these two will probably do more for the physical welfare of the people than those of any other section or sections of the community. This committee owed its existence to an admirable memorandum addressed to the War Office by Sir William Taylor, Director-General of the Army Medical Service, in April, 1903. In this memorandum he drew attention to Sir Frederick Maurice's statement that two out of every five would-be recruits were unfit for service at the end of two years, and showed from the recruiting tables that from 1893 to 1902, 34·6 per cent were rejected on inspection, and 3 per cent more were either rejected within three months or discharged as invalids before they had completed two years' service. This brings the total of unfit within two years up to 37·6 per cent, which is a little less than two out of every five, or the 40 per cent which Sir Frederick Maurice had stated it to be. In consequence of this an Inter-Departmental Committee was appointed, and after eleven months of hard work presented the report which we are now about to discuss.

The first thing that strikes one is that the name of the Committee was an unfortunate one. As Sir William Taylor very clearly pointed out, the important question was not that of deterioration as compared with past time, but that of physical inefficiency in the present. Yet in spite of his remonstrance the Committee in their conclusions have given much more prominence to the question of deterioration than that of inefficiency, and instead of recognizing the invaluable services which Sir Frederick Maurice and Sir William Taylor have rendered to the community by drawing attention to this inefficiency, they have rather slighted them by saying in their first conclusion that "the Committee hope that the facts and opinions that have been collected will have their effect in allaying the apprehension of those, who, as it appears, on insufficient grounds, have made up their minds that progressive deterioration is to be found among the people generally." After this soothing statement it is rather curious to find that the

Committee state that in order that "the present 'acknowledged evils' may be removed, complacent optimism and administrative indifference must be attacked and overcome." But whatever fault may be found with the conclusions of the Committee there can be no doubt whatever as to the enormous value of the information contained in the body of the report and in the evidence that they have collected. In regard to the question whether the whole population or even those composing certain strata have undergone deterioration, Sir William Taylor, in a second memorandum of November, 1903, pointed out that there are no reliable data for the past physical condition of the people, so that it is impossible to form any satisfactory comparison with the present, and to ascertain with any certainty whether deterioration is going on or not.* To this conclusion the Committee have also come (Par. 67).

In order that data shall be afforded for future comparison they recommend that a physical census of the people shall be taken, beginning with the children in schools and factories and extending it gradually over the population at large (Par. 423). The apparent decrease in the physique of recruits they consider to be due not to any actual deterioration of the population, but to the recruits having been drawn from a stratum of the people poorer and physically weaker than that which formerly supplied them (Par. 30 of the Report). The conditions giving rise to this physical inefficiency have been very thoroughly investigated by the Committee, and it appears that, excepting where parents are affected by syphilis or drunkenness, the child inherits at birth a good physique, and if properly cared for in infancy and childhood it may grow up strong and healthy, although its father and mother may be physically weak from bad surroundings (Par. 247). Unfortunately the chances of a child born under such circumstances receiving proper care are small, for the weakness of the mother in a very large number of cases renders her unable to suckle her child, and the food that is given, either from ignorance, carelessness or poverty, is quite unsuitable, so that the "sacrifice of infant life is enormous" (Par. 277). In addition to this census periodical measurements of children and young persons in factories should be taken. For this purpose, school teachers, factory surgeons, and a small staff of professional surveyors (Par. 423), may be able to superintend the process, but they cannot instruct the teachers, and the most likely person to be called upon to give instruction, will, I think, be the Medical Officer of Health. The medical examination of school children, which should not only be complete, but periodical, underlies, as the Committee very truly says, all schemes for improvement in school training (Par. 320). It is only by such examination that we can learn what the capabilities of a child are, and what amount of work, mental and physical, may reasonably be expected from it, and it is only by repeated examinations that we can ascertain what effect the school work and the school exercises are having upon it. The system of examination for mental work is already in full swing. and we now want that system extended to physical conditions. By such examination it will be possible to put clever and weak-minded children into different classes, to place the physically strong, the physically weak, and those suffering from unsuspected cardiac or other disease, in their proper groups, and by adapting the mental and physical training to each we shall get the maximum of good and the minimum of harm. All this will take time, it will take skill, it will take attention and care, and who is to do it? Such inspection is no doubt a branch of public health, but can medical officers undertake it in addition to their other duties, remembering that it is not only for once that this has to be done, but that it must be periodical? Such inspection I think may well avoid a great deal of injustice. I remember when at school seeing a boy caned every day for not knowing his lessons, and great was his delight as he came to school one morning saying that he knew them perfectly. Poor boy! he was caned all the same, and I am quite convinced now that it was neither indifference, carelessness, nor stupidity on his part, but simply defective vision, so that he did not see what was written upon the blackboard; and so, however perfectly he had prepared his lessons beforehand, he was unable to do what the masters desired. A pair of glasses I feel sure would have saved him a daily caning, and would have saved many another child from headaches almost as frequent and perhaps even more painful. And what an amount of pain might be saved to children by periodical examination of their teeth, by the judicious application of a little bicarbonate of soda to remove actual aching, by extraction if necessary, and by the regular use of a piece of soft wood every night as a toothbrush. In many cases, no doubt, timely stopping of the teeth might prevent further decay, but here again the question arises, who is to do it? At the same time that the teeth are inspected the medical officer would see the state of the tongue, and with the assistance of a question or two might find out facts of importance in regard to the child's digestion and the suitability of the food it was having. By examination of the ears the child might not only be saved much pain, but much danger, and by timely care mastoid abscesses or even meningitis might be prevented. Such examination too, in many cases, might show the advisability of a child's exemption from school for a while, and the risks it would otherwise run from exposure to cold, etc., might be avoided. For sometimes in going to school the child may get its shoes, stockings, and clothes wet, and having no change at school may sit there for hours with a chance of greatly aggravating any mischief in the ears or elsewhere, or even bringing on disease when the child was previously healthy. It is very difficult to see how such risks can be completely prevented, but at any rate inspection would greatly lessen the dangers to which they would otherwise give rise, and the proper warming of schools suggested in recommendation 34 of the Committee's report requires special attention.

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* Report, p. 100.

All the recommendations of the Committee must, I think, have the approbation of all medical men, and one of the questions for this Society to discuss is, how they had best be carried out, and what part Medical Officers of Health may be expected to take in doing so. In all probability judicious physical training will not only aid the growth of a child, but will make it more healthy generally, and give it more power to resist disease. Judicious physical training necessitates, as I have already said, a preliminary medical examination. A few months ago I went to Philadelphia, and was told that all the undergraduates of the University of Pennsylvania are obliged to go in for a course of physical training. Before doing so they are inspected medically and their weak points ascertained. The exercises are so adjusted as to strengthen the weak points and bring the men up as far as possible to an all-round standard of strength. Something of the same sort would be done by medical inspection, and the Committee are no doubt right in advising that regular gymnastic exercises, as well as games, should be included in the programme (Par. 308). The provision for proper accommodation for exercise in bad weather, and for playgrounds in good weather, would be one of the duties of the local authorities, and it will fall to the local Medical Officer of Health to see that it is carried out rightly. The feeding of school children is another question of the utmost importance, and the opinion of the Medical Officer of Health would in all probability be required, both as to what children are to be fed, and how they are to be fed (Par. 358-365 and Rec. 42, p. 91). If I may venture upon a suggestion, it seems to me that a regular school kitchen might be attached to every school, and in this meals might be prepared, and such children as could pay for them might buy, and those who could not pay might be provided for either by voluntary subscription or by the rates. The large demand for food which this would bring about would give ample opportunity for the girls attending the schools to learn cookery, and the instruction which they would receive in the art of preparing palatable meals at a cheap rate would not only be useful to the children themselves in their own future life, but it would probably re-act upon their mothers at home, and might induce them to learn a little more about the way of preparing food. At the same time that the children are learning how to cook food, they might receive instruction as to the comparative values of the different kinds of food, and the best way of spending money so as to get the utmost value for it. Such school kitchens might perhaps sometimes give cooking lessons to adults, and occasional lectures on food and food-values might perhaps be given to them, and here also the services of the Medical Officer of Health will probably be required to give them instruction, or to secure those who are capable of doing so. Schools should thus become great object lessons to children in ventilation, exercise and food; but in addition to this there should be systematic instruction in the general principles of hygiene, the evils of alcohol, the disadvantages of early smoking, and the injury that may be done by excessive tea-drinking. In this way we may hope that the rising generation will know a good deal more about the laws of health than their predecessors; but the mothers and fathers may also be instructed by occasional lectures. A great deal may be done by lady visitors who will visit the homes and see that the general principles in lectures, or at school, are actually being put into practice. It will I think not be difficult to get such visitors full of enthusiasm, energy, kindness, and sympathy; but what they will need will be information and direction, and here the Medical Officer of Health may work with them and through them to the great advantage of all concerned. We have been talking of the feeding of children and adults, but now we come to one of the most important questions of all, the feeding of infants. There can be no doubt that if mothers were not to work for at least one month before and after delivery, it would be much better for their progeny, but the difficulties of enacting a law to this effect are great, and might be productive of much hardship. We may hope to amend things by and by, but as things are now we must accept the fact that a great many mothers for one reason or another are unable to suckle their children, and the children will be fed artificially. If the child is to be satisfactorily reared, milk in some form is indispensable. Some infants may thrive even upon condensed milk and cereal foods, but for the great majority fresh milk is needed, and the difficulty of getting milk, clean, fresh and unadulterated in towns is considerable, especially for those belonging to the poorest of the population. It has been suggested that the municipalities should provide milk depots. For my own part I am inclined to think that instead of doing this directly the municipalities would do better to arrange with the large dairy companies in whose hands the chief supply at present lies, and oblige them under a heavy penalty to supply milk which will conform to the requirements laid down by the municipality. I believe, however, I am right in stating that the President of your Society, who probably knows more about this than any one else, is at present engaged in drawing up a scheme for the proper supply of pure milk to towns. As I know from sad experience in my own family, there are some children whom it is impossible to bring up on ordinary cow's milk, however pure it may be, or however diluted; and I believe that if such children are to be kept alive it is necessary to provide them with milk in which the various ingredients are properly adjusted in accordance with the child's needs according to a doctor's direction in a laboratory, just as the ingredients of a doctor's prescription are made up for him by a chemist. I think that the proportion of such children is quite a small one, but that they do exist I am certain, and without provision being made for them they will certainly die. Such provision I think might be made by establishing small hospitals scattered throughout large towns where the worst cases might be treated indoors, and the less serious ones might perhaps be treated as outdoor patients, while each such hospital, as well as the out-patient department of general hospitals, should be a focus for disseminating information regarding infant feeding by means of verbal instruction and printed leaflets, whilst lady visitors, by visiting the parents at home, might see that the instructions were properly carried out; these visitors having, as I have already said, themselves received instruction from the Medical Officers of Health

The last, but not the least, question which I shall touch upon is that of house accommodation. Over-crowding, with its attendant evils of uncleanliness, foul air, and bad sanitation, stands out prominently in the opinion of the Committee as prejudicial to the health of the people (Par. 82). Over-crowding is almost certain to arise if people will flock in from the country to the towns, and that they do so in great numbers there is no doubt, for to every one who lived in a town in 1851 three do so now (Par. 80). This may perhaps be diminished by making country life more attractive, country homes more comfortable, the food in them more appetising, the cottages more attractive, and by providing some sort of amusement in country villages or country districts for men and women after the day's work is done. Much no doubt should be done in regard to country cottages, and building bye-laws require to be carefully supervised lest they do harm instead of good. I may be quite mistaken, but it has occurred to me that one of the forces that is driving people from the country to the towns is the difficulty of getting cottage accommodation, a difficulty which to some extent is due to the combined action of the law of entail, and to the change in agricultural conditions brought about by ocean steamers and cold storage. On account of the cheap freights, wheat and butcher meat can be brought from America and Australia with great ease, and sold in this country at such rates as to keep down the price of home-grown wheat and home-grown meat. The depression of the price of meat of course affects also the value of root crops and feeding stuffs, and in this way the value of land for agricultural purposes has become enormously depreciated. Rents have consequently gone down, and many men who own enormous estates have their incomes from the land so much reduced that, burdened as they often are with the payment of jointures or of mortgages, they are in reality so poor that they cannot afford to build new houses on their estates. This difficulty might possibly be met in two ways, first by making it easier to break the entail and sell part of the heavily burdened properties so as to relieve the remainder, or else by some provision by which joint stock companies should be allowed for a perfectly nominal ground rent to build cottages on such estates and draw the rents directly from the tenants. Companies building cottages in very large numbers could probably put them up more cheaply than others, and one of the great causes which is driving the country population into the towns would thus be done away with. In towns the effect of over-crowding in raising the death-rate came out very prominently in the evidence before the Committee (Par. 86), and they think that in order to lessen the evils the local authority should, with a view of settling a term to these evils, exercise their power to treat any house, or any part of a house, so over-crowded as to be dangerous or injurious to the health of the inmates, as a nuisance, and for the abatement of the same notify that at a given date no one-room, or two-room, or three-room tenements will be permitted to contain more than two, four, or six persons respectively (Par. 87). The slums must go, and in their removal, as one witness very truly said, everything must depend on the powers of the Medical Officer of Health, on the keenness with which he exercises these powers, and in the way in which he is supported (Hawke's Par. 13011). As things are at present, the Medical Officer of Health, by the very thoroughness with which he discharges his duty, may incur the dislike or resentment of some of the local authorities by whom he has been appointed, and they will in consequence try to get him discharged, if they can, sometimes unfortunately with success (Par. 13511). In Par. 118 and Rec. 9, p. 86 of the report the Committee makes a proposal which seems to be a good one, that the Medical Officer of Health should have security of tenure and not hold his office at the good will of the local authority. Behind the Medical Officers of Health stand at present the Local Government Board, but the offices of this Board are so manifold that it is impossible for it to discharge them all properly, and perhaps the best thing for the country would be to have a Board of Health. There does not seem to be at present very much chance of such a Board being appointed, and in place of it the Committee propose an advisory Council which should represent the Department of State within whose province questions touching the physical welfare of the people fall, with the addition of members of the community by the medical corporation and others, whose duty it should be to receive and apply the information obtained from a bureau of the Local Government Board with the whole weight of Government authority and scientific prestige behind them. It would be their function to advise the Government on all legislative and administrative points in respect of which State interference in health matters was expedient, consider and report upon all problems of public health, and guide the action of representatives in this country in foreign congresses of public health (Par. 64, 124, 302, and p. 85).

Failing a Board of Health such an advisory Council would in all probability be a great service, and the Society that I am now addressing may do a great deal to insure that these recommendations are carried out, and also to insure that the advisory council is constituted in the right way and with proper powers. The question of public health is a very complex one, and however much those who take it up are interested in it, however hard the various associations which are working for its attainment may toil, it is hardly possible for them to succeed if they work singly. In order that the common end may be successfully attained they must all work together, and it is with the object of attaining co-ordinate action that it has been proposed to found a National League for Physical Education and Improvement. The object of this League, as stated in the draft scheme of which copies have been supplied to you, has for its object not to displace any of the agencies at present at work, but to make them known to one another, to ascertain how best their work can be supplemented where it is deficient, and to extend the benefits of physical education throughout the whole country. In every parish the squire, the parson, the minister, the schoolmaster, and the benevolent woman, and in towns the mayors, or provosts and corporations, should be induced to take part in the organization for carrying out all the means of physical improvement which have been touched upon in this address. This league has not been brought formally before the public, because it has been thought better to have the scheme thoroughly worked out before this was done, but men of all classes and in every part of the country have already agreed to support it. It was felt that as the purposes of the League are closely connected with medicine, it was better to have it backed by medical men before other classes of the community were asked to join, because most of them are less able to judge of its merits or demerits than medical men, and they will consequently be led to decide their action in regard to it chiefly by the leaders of the medical profession. At present, with the exception of a few men who have been very active in promoting the league, either in London or the provinces, only men holding Court appointments or official positions as heads of medical corporations have been asked to join. Amongst those who have consented to act as Vice-Presidents, I am glad to say is the President of your own Society, and I trust that as soon as the league is publicly brought forward, not only every Medical Officer of Health and every school teacher will join it, but that every man and woman in the country may become associated with it, and that every child may derive benefit from it. Although the Committee in its conclusions say that in carrying out their recommendations for the rectification of acknowledged evils they do not rely upon any large measure of legislative assistance, yet the proposed League, by numbering amongst its members all the men and women who know what is necessary, and many Members of both Houses of Parliament who will act upon such knowledge, may bring about legislative improvement such as no single body at present could hope to effect, at least in a moderate time. Through it the Medical Officers of Health may be able to bring about quickly much needed changes which they see to be necessary, and if they and the school teachers combine with others, who, like them, have the welfare of the nation at heart, they will be able to carry out thoroughly the measures which the Committee advised in their third resolution, namely "complacent optimism and administrative indifference must be attacked and overcome, and a large-hearted sentiment of public interest take the place of timorous counsels and sectional prejudice." In conclusion, gentlemen, let me again thank you for the honour you have done me in letting me open the discussion, I beg you to pardon me for the very imperfect way in which I have been able to fulfil the task, and ask your approval and assistance for the proposed National League for Physical Education and Improvement, a league by which I believe that the recommendations of the Report of the Inter-Departmental Committee on Physical Deterioration may be carried into effect, and the welfare of the nation, which both you and I desire so greatly, may be secured.

PROPOSED NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND IMPROVEMENT.

OBJECTS OF THE LEAGUE.

It is obvious that as the causes of physical imperfection are so numerous and act upon such numbers of people and over such a wide area, the means to combat these causes must also be various in kind and must act over the whole length and breadth of the country.

A great number of agencies are already at work giving instruction in the rules of health, in housekeeping, in cooking, and in the feeding of children. Others are trying to lessen the consumption of alcohol by supplying nutritious food in its place. Others again are trying to improve the physique of the rising generation by supplying gymnasia in town or country; by organizing associations for physical exercise, such as cricket, football, drill associations, cadet corps, boys' brigades, rifle clubs, volunteer corps, and girls' clubs.

In the social class immediately above the lowest class of the population there are boys and girls whose occupations are sedentary and their wages small. They cannot afford to join tennis, cricket, football, and similar clubs. For these young and growing persons gymnasia and swimming baths should be available at a nominal cost. Already many municipalities are converting the swimming baths used only in the summer months into gymnasia for the winter months.

The numerous associations which are all working for the common object of increasing the physical development and well-being of our population are at present under the disadvantage of not knowing what the others are doing, and of being even unaware of their very existence.

DRAFT SCHEME OF THE PROPOSED LEAGUE.

The object of the proposed Physical Education and Improvement League is not to displace any of the agencies at present at work, but to make them known to one another, to ascertain how their work can best be supplemented where it is deficient, and to extend the benefits of physical training throughout the whole country. The League would thus be subdivided in a two-fold manner, territorially and functionally.

Territorially it would be divided into local branches. In each parish and in each small town there ought to be a branch, and in larger towns several branches, according to the population.

Several branches should become associated into a district, and several districts into a county or borough branch. These might not only co-operate with one another, but also by a healthy rivalry might stimulate one another to active efforts.

Functional division is necessary, because the objects requiring attention are so numerous.

Each branch should furnish instruction to the people on the laws of health generally, to mothers on the care of children, to girls on the methods of cooking and housekeeping. Physical exercises and opportunity for open-air games should be given to both boys and girls; while the natural desire of boys to become volunteers should be encouraged, and drill, rifle, and shooting practice and all sports fostered. In every parish the squire, the parson, the doctor, and the schoolmaster, and in towns the mayors and corporations, should be induced, if possible, to take part in their organization, whilst there should also be a committee of ladies to supervise the instruction of mothers and the care of children. The work to be done in each district would be subdivided, the ladies would undertake the teaching of mothers and the inspection of houses and children, the schoolmaster and mistress would supervise the physical exercises and games of the children, the squire or mayor, or others interested in the subject, would look after the provision for playgrounds, rifle ranges, club rooms and drill halls, and we feel sure that the doctor would give general advice and assistance wherever he could.

A great deal of work would be done locally by the branches, but it would be necessary to have a central bureau to which any branch might apply for any information or help which it required. It would also be part of the work of the League to initiate changes in, or additions to, existing laws, when such changes or additions seemed necessary, and the immense amount of information which would then be at the disposal of the League would render its advice invaluable. Amongst other objects to be aimed at would be the medical inspection of school children.

DISCUSSION.

Sir John Gorst, M.P., said that although as a matter of fact he had merely come as a listener, he could not refrain from supporting the proposals made by Sir Lauder Brunton, with which he cordially agreed. He greatly rejoiced at the way the movement had been taken up in the country by the medical profession generally. He considered they were the most competent body in the country to deal with it, and if they took it up seriously it could not fail to be a success. For many years, long before this Committee was appointed, all those who were engaged in the work of elementary schools of this country were conscious of the great proportion of children who went to the schools totally unfit to receive the education provided for them. An Act was passed, therefore, controlling the work of school children out of school hours in the endeavour to promote a better condition among children. The proper body to take action in this matter is the educational authority, the local authority, and town councils, who have very wide and general powers, even sufficient power without legislation to do anything to promote the general health of the children. The best thing they and the League could do would be to bring pressure to bear on all local authorities throughout the country to move in the matter at once without waiting for legislation. The first thing to go for is a medical inspection. They might at least get a medical inspection of children when they first went to school, and thus have record kept of the actual condition of the children when they first attend school. By supplementing this with periodical examinations, it should bring home to the educational authority the actual condition of the children they are attempting to instruct. But the inspection would only tell them what the mischief was, and then how were they to cure it? In his opinion by far the best plan was to have a Board of visitors attached to every school. He referred to what had been done in connection with the Tower Street School, in Seven Dials. A voluntary committee of ladies had been formed there six years ago, and the schoolmistress reported to them any instances of ill-nourished or ragged children, or those suffering from any ailment or disability of any kind. The members of that committee then visited the parents, gave advice, and no doubt assistance. In six years the result is that whereas £40 was spent every winter in feeding children in this school they now only spend £6, and the children are better clothed and happier than they were. In fact, the system carried on there is so satisfactory that when the parents remove from the neighbourhood they send their children great distances in order to attend it. He did not think it would be a very costly thing to feed all the children if a proper system of visitation were adopted. The residuum of children whose parents could not afford to feed them would be so small that they might be fed by the public authority. Dr. Eichholtz, an Inspector of the Board of Education, who was before the Committee, said that there were two classes of the children in the very poorest districts who stood out in great contrast to the rest, and these two classes were the Jews and Irish. Their children were better fed and healthier than the other classes where they lived. This has been confirmed by Dr. Hall, of Leeds, an ex-factory surgeon, who devotes himself to an examination of this kind. He gave the speaker a description of two schools in the very dirtiest parts of Leeds. They were both Board Schools under the local authority. One was frequented almost entirely by Jews and the other by Christian children, and the contrast was marvellous. It was apparent at once on entering the schools. The parents of the one class were as poor as the other. But with the Jews it is part of their religion to take care of their children; the mothers usually suckle the children, and the fathers make great sacrifices to bring them up, and that, he considered, was the reason they were such a healthy class. He thought that if they organized visiting committees they might bring the English Christian mothers up to the same level as the Jews and the Irish. He had been travelling about the country a great deal, and found that this question of feeding the children was exciting great interest everywhere, especially amongst the working classes themselves. He was strongly of opinion that some step should be taken in this direction, and thought that pressure could very easily be brought to bear on Town Councils and Boards of Guardians, as they were elected once a year. He felt sure that the effect of the movement now taking place would be that the local authorities would be stirred up to improve the condition of the children. He was of opinion that they possessed sufficient powers to make a very great change in the condition of the children of the poor without waiting for the very slow progress of legislation in the House of Commons.

DR. H. FRANKLIN PARSONS, speaking in his private capacity as a Member of the Society, and not as an Official of the Local Government Board, said that he had listened with very great interest to Sir Lauder Brunton's paper, which, no doubt, deserved the highest consideration. At the same time he thought a few words of caution were needed. In the first place, he thought they would do harm rather than good by adopting measures which would in any way tend to diminish the sense of individual responsibility. It was the tendency of the present day to assert the people's rights and wishes and pleasures, before their duties, and they ought not to lessen in any way a parent's responsibilities towards his children. Sir John Gorst had given a very good illustration in his description of the two classes, the Jews and the Irish. He personally was afraid that free meals for school children would tend to do harm rather than good, because it would relieve parents from the sense of responsibility, and wages might be lowered, as was the case under the old Poor Law. Secondly, parents would have more money to spend in drink, which is one of the prominent causes of deterioration. He thought that Sir John Gorst's suggestion of visiting committees was a very good one, and reminded them that the system already existed in regard to the boarding out of pauper children. Another way would be through County Medical Officers of Health. Every county ought to appoint a Medical Officer of Health, and as the county is the educational authority, the supervision of the health of the children might well form a part of his duty. He considered that neither the county nor the local Medical Officer of Health could make such a periodical supervision of the children as had been suggested, but they could supervise the work. If the children were periodically weighed and their height measured, and any noticeable defects registered, any one examining the register would see if the children were improving, and if not it would be a duty to see what was the matter at home. They must have some regard to the cost of the proceedings they recommended. By putting extra burdens on the community they might be doing more harm in one direction than good in the other. What he wished to say was that by raising the rates it would be a greater burden on the working classes than on any one else.

Miss Anderson (Home Office), said that she considered it a great honour and privilege to be allowed to address the meeting. Speaking in her private capacity, she considered that although the lady visitor, the "benevolent woman," was possibly a great asset for public health, she lacked training, and this might be taken up with advantage by the League. Many women had very little opportunity of learning how they could help, and as regards the parents, she thought that their mistakes were more due to ignorance than lack of will. Her own opinion was that girls of all classes in this country, from the lowest to the highest, required longer teaching in order to prepare them for motherhood. It was impossible for them to learn hygiene from English mothers of the present day, they all required teaching. She considered there were two directions in which progress might be made—one an expensive method, by lengthening the education of the girls; the other by recognizing the need of women who could teach, and by giving them a special training. She hoped that eventually the result of the proposed League would enable the mothers to remain at home and tend their children instead of being compelled to go to the factories as at present.

Dr. J. C. McVail considered that the Society was immensely indebted to Sir Lauder Brunton for the way in which he had brought forward the question, and it was impossible not to sympathize with the speaker in regard to the title given to it by the Committee. They all knew that there was abundant physical deficiency, but they did not know whether it was greater or less than it was fifty years ago. There was no doubt that the population in towns had greatly increased, but at the same time the death-rate in towns and country districts had fallen immensely. It might be conceivable that the modern sanitary conditions ought to be such as to allow unhealthy people to live a longer life than healthy people fifty years ago. As to the first recommendation, the establishment of anthropometrical measurements, he did not think the Society should push the matter too strongly. Were they likely to get such a thing from a Government which would not grant a quinquennial census or pay for a meteorological observatory on Ben Nevis? That sort of thing might be done in Germany, but he did not think it would be possible in Great Britain. He thought they were just at the beginning of a great advance movement in public health. Up to the present they had been occupied in environment, with the improvement of the environment of the individual. They had made great progress in that direction, and now they were beginning to attack the individual himself. He thought, however, that the advice tendered by Dr. Franklin Parsons should be borne in mind. They could not make all people equal. What they wanted was to give every child a chance, and for that purpose it was right to go to the individuals and try to find out what defects they had, but there must be as much voluntary organization as possible in the matter. He thought the suggestion of Sir John Gorst with regard to committees connected with every school an admirable one. There would have to be official supervision, but the money should go from the pockets of the benevolent. He called attention to the fact that in connection with the Scottish School Board one authority had recently working class dwellings, and had appointed teachers and usekeeping for each, so that the children might learn cooking ic economy. By this means each girl had several hours kly in such dwellings as she would be likely to eventually er station of life. With regard to the reference to depreciation ral land, he thought that the new system of vehicular traffic rs would have a beneficial effect on rents, as it would enable ies to be established in country districts. An attempt is ng made in Glasgow. The University printers have taken right out into the suburbs, and have built proper houses rk people. He considered the appointment of an Advisory ry excellent suggestion. Personally, he thought that if one the actual minds of the great public departments they would ey are thoroughly in sympathy in all these matters, but the he official is closed. The Advisory Council would at least ell the country what it thought after studying the subject.

ur Newsholme said they were greatly indebted to Sir Lauder having been the means of introducing such a valuable Sir Lauder Brunton's presence there that evening reminded was one of the men who had given the death-blow to polyphar- the present day they appeared to be passing through a eutical stage of preventive medicine, and a large number remedies were suggested for present evils. But they had n to the root of all the mischief. The statistical bases on Villiam Taylor's remarks were based as well as those of Sir were shown to be entirely untrustworthy, and the army istics were not only misleading but extremely fallacious. however, they should be grateful to Sir William Taylor and ce for having initiated an agitation out of which good might eemed to him that Sir Lauder Brunton had really defined evils, *viz.* overcrowding, deficient or improper food, and Here again, in the report of the Committee and elsewhere, e same lack of distinction between primary and secondary instance, overcrowding took place either because people or indolent to spread themselves, or more frequently because afford more house room. Either they cannot afford it or money in other directions, or the rooms cost too much. The houses in towns was bound to become dearer and dearer. possibility of cheapening houses, and there is only one way the matter, and that is by increasing wages, so that people r rent. Then as to the question of deficient feeding, a matter hn Gorst had taken up with great skill. Why are the children ed ? Either the parent does not earn sufficient or he spends n the wrong direction. Therefore in the first case give him s, but do not supplement his earnings by the State. If he noney wrongly, he should be compelled as far as possible to ey to his family, so that they may be properly housed and n Gorst had said that the residuum of children who required s a very small one, and might be fed by the local authority. ed that Sir John Gorst had thereby given away his case the residuum was a small one, why should the State step in ? speaker's, town (Brighton) they gave away 600 breakfasts ng.

ases they were obliged to decline to give the breakfasts. He ever, that underfed children are totally unfit to receive the education that is given to them, but at the same time they are in no worse case than children outside the school. He did not for one moment argue that they should not be fed. Indeed, the small residuum of cases left over they were all most anxious to help, but they must be picked out with the most rigid discrimination. They were all agreed with regard to the committee of visitors recommended by Sir John Gorst. But he, personally, disagreed with Dr. McVail's contention that it is impossible to have proper anthropometrical observations of the children. He considered they ought to have them once a year. As to free breakfasts, he thought the working classes would have to give them if they were given. He ventured to think, however, that voluntary organization was not yet exhausted and that there was no need to call in State intervention.

Dr. A. K. Chalmers said he appreciated to the utmost Sir Lauder Brünton's paper. He considered that the inspection of school children had a practical value. For instance, in Glasgow they had been carrying on some investigations which showed that children graded almost definitely to the size of the house they occupied. Further, whatever may be said with regard to feeding the children, they must accept the alternative; either feed them or allow them to grow up in the class of inefficients. Following the London experiment referred to, the Glasgow School Board had taken over a school for little children. The difficulty was to feed them. As they had no fund to meet the cost of food, the ladies who organized the mission called on the parents and said that the children could be educated on condition that the parents paid the expense of food. The actual cost worked out at a trifle over 1¼d. per meal. For 9½d. per week the child got food, and after four or six weeks it was apparent to the teachers that the children were physically good. The value of that illustration he thought was that whether the parents have to pay or the State has to pay, the argument in favour of the State paying is the growth of the inefficient. That Jewish children turned out better physically on inspection he understood was the case in all places except Glasgow. He did not think they had a worse type of alien than the Jews in Glasgow. They were not physically better in comparison with the Christian children, and he found that the Jews were very much worse as regards eyesight. In conclusion, he would like to associate himself with everything that had been said in connection with home visitation.

Dr. Kerr, referring to the report, said he thought that the proportions in which the subjects had been treated had been altogether lost sight of. The feeding of children had also been somewhat exaggerated in the report. The children that are underfed form a very small residuum. At least that was his own experience, and he thought that it was also the experience of Dr. Chalmers in Glasgow and Dr. Newsholme in Brighton. Underfeeding must be correlated to inefficiency in the parents. As to the question of the Jews, almost unfair use had been made of that argument, because he thought there was such a thing as racial habit of body. At the same time, they found that the Jews lived, flourished and fattened on a diet which English children would not touch. They ate an enormous amount of fat. In his opinion the child in school at once suggests itself as a means of getting hold of a mass of people. We may regard that child as a potential citizen. We also have the other side of the question, the purely educational side, which to a great extent was the view he was compelled to take for practical purposes. Undoubtedly, this class of work must come under the Medical Officer of Health in the future, although he did not think, as far as the educational aspect was concerned, that it would be the best solution. He referred to all those questions of cleanliness, etc., where the school doctor and the school nurse come in. The school nurse in London is an efficient person visiting the house, and this personal aspect, as Dr. McVail pointed out, is the new aspect which is opening up in public health. Each person ought to be taught to make himself fit. The teacher must be taught hygiene and the child must be taught. They wanted to compel them to treat themselves hygienically, and that is the method which is being followed up in London now. Whatever plan is formed the parent is compelled to have it treated so far as the law allows it. He thought it would be generations before the question was properly dealt with, unless the screw was put on in Government quarters. The only way by which it could become general was through the Board of Education, but that Board had been plunging along for generations, apparently without any medical control, although for a small sum this work could be organized throughout the country by a medical department. As to anthropometrical measurements of samples, he thought it would be an excellent plan, but measurements as a general thing throughout the country were not worth the money. They must, however, have samples.

Dr. Ralph Vincent had been impressed by an argument with which he sympathized, and it was that everything should be done to increase the sense of parental responsibility. He wished also that they could do something to increase the sense of responsibility of the House of Commons. He was of opinion that unless they took steps to see that the children were medically inspected no successful results would follow. The question of the feeding of infants was, he considered, a most serious one. In the present state of affairs amongst the working classes the mother could not feed her baby in a natural manner, and the wages of the working man would not allow him to provide a substitute. As to the production of milk, it was a matter which had been absolutely neglected. Some people wanted to boil it first, others required it sterilized, but Nature intended that it should be consumed without coming into contact with the air. In no other way could they prevent milk from contamination. Consequently, when they proceeded to handle such a dangerous product as that they had to take special measures to meet the case. He considered it very dangerous to give poor people milk, and that sterilized milk should be dispensed with at once. Further, he was of opinion that all municipal milk depots should go by the board. Milk was a most dangerous product to deal with, and no adequate measures had yet been taken to control it.

Dr. J. Howard Jones, referring to the difficulty of moving the Board of Education, said that last year, acting on his advice, his Board passed a resolution that after Jan. 1, 1905, they would not allow children under four years of age to attend school. This was reported to the Educational Department, and the County Council had received a letter from the Board of Education stating that they had no power to exclude children under four years of age. He considered that the efforts of School Education Committees should not be treated in this way by a Government department.

Dr. Francis J. Allan said that he could bear out the statements of Sir John Gorst in regard to the Tower Street school, as he was personally acquainted with it and the methods adopted there. During the last fifteen months they had instituted a Health Society in the City of Westminster, in which they had enlisted the services of district visitors of all creeds. Most of the visitors knew very little about the subject at the commencement of the Society, so that the greater part of the fifteen months had been occupied in teaching them. Now that they were becoming used to the work, they were found to be extremely useful. They report directly to a sub-committee for their particular district, and they had found that there were very few whose parents were so destitute that the children could not have sufficient food, but they did find that they suffered from badly prepared food. Too many parents squander the money in drink they ought to spend on food. They had a very considerable Jewish population, and so far as infants were concerned, the mortality among Jewish babies is very much smaller than it is amongst other nationalities. He had found, however, that when the Jewish children grew up they were quite as susceptible to consumption and zymotic diseases as Christian children appear to be.

Mr. Wolf Defries, B.A., ventured to express the great satisfaction which he felt in seeing a subject of this kind under the consideration of that Society. The question of physical degeneration had undoubtedly engaged the attention of all those who had taken part in the discussion. They had, no doubt some personal experience, but the one class of man who in the concientious discharge of his duty had inevitably both the maximum of opportunity of observing, and a training second to none in the interpretation of observations of this character, was the Medical Officer of Health. He therefore welcomed the discussion on those grounds.

Dr. C. Sanders desired to place before the meeting the plain facts regarding his authority (West Ham), as Dr. Franklin Parsons had incidentally referred to the borough. The West Ham rates are now 9s. 10d. in the pound; they were 10s. Four years ago the local School Board were coerced by the Education Authority to build a new school, and in order to comply they had to apply to the Local Government Board for funds. The fiat went forth from that body that any municipal trading was to be very seriously checked. Some one whispered that the West Ham rates were 10s., and West Ham was used as the whipping boy. The Loans Board said that they would not lend. In between these two Government departments his Board were unable to build the schools, but now that the Town Council were the school authority, the foundations were going in. As to Sir Lauder Brunton's paper, he wished to emphasize the necessity of not overlooking parental responsibility. He should be sorry to look forward to the day when the Medical Officers of Health could do without mothers. He could see no reason why the municipal authority should approach the children. He did not see why they should see to them from the time they were born. It is an age of sanitation, and anything that can be labelled sanitation is seized upon by every one nowadays, and he was afraid that sanitation had run to seed. It was a matter of common knowledge that there was a large amount of distress in West Ham. It had undoubtedly been magnified, but fortunately funds were opened, and a huge sum of money was subscribed. A great deal of money just before Christmas was wrongly applied, but there was a balance, and the proposal was to hand it over to the Emigration Society, so that 500 families should be assisted to emigrate. What will be the result? The Emigration Society will come down to West Ham and pick out just the families that I should like to keep there to keep down my death-rate. The good, honest, sober people will be picked out and drafted to the Colonies, and their places filled by the ne'er-do-wells and casuals. This he considered was diametrically opposed to the science of sanitation.

The President (Dr. J. F. J. Sykes) said that the subject was so very wide and the report of the Committee was such an *olla podrida* that it was deal with it. They had had placed before them by Dr. 'arsons an illustration of how far they were going in assisting n. Personally he would go a step further, and feed the mothers, idered that the evil was in the feeding of the mother. He was ed at the insufficient statistical bases in the report of the to found definite opinions upon. To take one illustration, n supplied the Committee with a very excellent table as to of children, but the ages of the infants were never extracted. s ago the Registrar General did extract the ages of children er one year, comparing three agricultural counties with three ring counties. The result was to show that the toll that the ring county took was greater. He, the speaker, had taken two d compared the statistics for his borough. He found that opposite result was taking place to that ascertained by the General. For instance, in 1891, as they ran back from the onth the incidence of mortality increased as they advanced e mother. The toll was the greater during the first quarter and apparently the proportion of deaths was increasing at this it was true it meant that the mothers produced the children iability. Dr. Tatham pointed out that immaturity was one gest causes of the higher mortality amongst infants. Dr. ad been working at the same thing in Glasgow, and he had me results as the speaker. Could we prevail upon Dr. have extracted some figures to show if there was any truth in could get the same results for all the urban districts, it would kable result, and would show that there is less viability among n coming into the world now. That would be due to certain ts which were creeping into the habits of the mothers. It be due to artificial food, but that was not the case in St. Pancras. kes) wished to quote some figures which the *Times* had published nplete form. The *Times* compared the mortality of Preston, Medical Officers of Health know is where infantile mortality is in the kingdom, and it showed that the deaths from diarrhœa had fallen enormously, *viz.* from 197 in 1897 to 103 in 1904. se two years the earth temperature was exactly the same. ken out some figures for other places for the same periods :—

Localities.	3rd Quarter 1897.	3rd Quarter 1904.
on	243 ...	208
ersea (Milk Depôt)	243 ...	204
elens ,, ...	294 ...	256
pool ,, ...	329 ...	320
on (Lady Inspectors)	449 ...	208

does not possess any milk depots, but has women inspectors, ersea, St. Helens, and Liverpool have milk depots. These course may be susceptible of some explanation, and may not terpretation he had put upon them. In addition to feeling the Committee did not get out the figures referred to, ally sorry to see that they recommended all those measures he infant could be separated from its mother. Factory work, ion of milk depots, crèches, in fact every institution which eparate parent and child.

ER BRUNTON in replying to the discussion said, Dr. Newsholme hink that Sir Frederick Maurice and Sir William Taylor were rightly sat upon for having brought forward wrong data, but these data were supplied by the Inspector-General of Recruiting. The data were right enough, but the conclusions drawn from them were inaccurate. They asked for an investigation, and they thought that taken as a whole the records had failed in physical deterioration, and unless he was mistaken, the Committee admitted that they had failed in that direction and said that the reason was not that the whole population had deteriorated, but that they had struck a lower stratum. He considered they had done a great deal of service in drawing attention to the existence of this stratum. On the question of feeding the school children, there is one country which spends an extremely small amount of money on its army and navy—it has none—but spends an extremely large proportion on education. He referred to Switzerland, and had made enquiries in Berne on the subject. He found that most of the children attending the schools were fed by the parents, but a small proportion are fed by voluntary aid. A minute proportion are fed by the parishes. The system worked well. He was convinced that the great majority of unfed children might be fed by voluntary committees without much assistance from the rates. The fundamental cause of the evil was summed up in the quotation, "My people perish for lack of knowledge." The lady visitor would do a great deal, but who would instruct the lady visitor? The Medical Officer of Health should instruct her. And who will instruct the teacher? It is the Medical Officer of Health who will have to look after the playgrounds, the measurement of the children, and upon whom the whole thing falls. Increase the numbers of Medical Officers of Health if necessary; increase his powers; increase certainly his tenure. They could not expect to do away with one of the greatest evils without making his tenure secure. He referred to the question of overcrowding, which is associated with alcoholism. To do away with overcrowding the Medical Officer of Health alone could act, and how could they expect him to do it if he is liable to be turned out of his position because he says that such and such a slum should not be allowed to exist? One of the first things to do was to make sure that a Medical Officer of Health had a proper tenure. Carry out these suggestions, and then "Our people shall no longer perish for lack of knowledge." He asked them to help forward the National League for Physical Education and Improvement. It was still in embryo, but was brought before them as one of the most powerful bodies in the country, and it was for them to see that it was put on right lines. He therefore asked them to pass the following resolution:—

"That the Incorporated Society of Medical Officers of Health expresses its sympathy with the objects of the proposed National League for Physical Education and Improvement, and is prepared to give such advice and assistance in the promotion of the League as may lie in its power."

The bye-laws of the Society having been unanimously suspended, the President put the resolution to the meeting, and declared it to be carried unanimously. A vote of thanks to Sir Lauder Brunton was carried by acclamation.

ALLEGED PHYSICAL DEGENERATION IN TOWNS.*

By ARTHUR NEWSHOLME, M.D., F.R.C.P.,
Medical Officer of Health, Brighton.

> "Alternate progress and impediment,
> And yet a growing prospect in the main."
> *The Recluse.—Wordsworth.*

I IMAGINE that the majority of my audience will expect me to take as the basis of my remarks the assumption that the degeneration of urban populations has been abundantly proved, and will expect me on this assumption to spend the greater part of the time at my disposal in discussing remedies that may diminish or divert this degenerative trend.

The statement that our national physique is degenerating has been so frequently made and so vigorously repeated that if one doubts this fundamental point it is against the weight of public statements made in nearly every journal with confidence and assurance. We are told it is of "no use having an Empire without an Imperial race." The Inspector-General of Recruiting has informed us that "the one subject which causes anxiety in the future is the gradual deterioration of the physique of the working classes, from whom the bulk of the recruits must always be drawn." The recent report of the Royal Commission on Physical Training (Scotland) says that "Our attention was directed to the subject of progressive deterioration of the town inhabitants of our island," etc.; and although the Commissioners refrain from giving a decided opinion on this point, they find evidence that "there exists in Scotland an undeniable degeneration of individuals of the classes where food and environment are defective."

It would be easy to multiply such quotations; and it becomes necessary to state the reasons for my belief that the above statements of opinion are based on a misconception of the facts.

The main statistical basis of the belief in national physical degeneration is the recruiting statistics. To argue from the somewhat increased percentage of rejections of recruits that the average physical status of the population has declined is most fallacious. Such recruits have always in the main represented the lowest, or almost the lowest, stratum of society. The army is chiefly recruited from the "unemployed." The prosperity of national trade, the increase in the rate of wages which is manifest in every industry, and the greater comforts of non-military life have all tended to diminish the attractions of a military career, and to compel the recruiting sergeants to draw from, and the Medical Officers to pass, recruits of an exceptionally poor physique. The soldiers cannot accurately be said to represent the average physique of the Commonwealth. The figures themselves, when carefully analysed, do not bear out the interpretation put upon them; and the whole of the statistical argument in favour of degenerated physique in soldiers fails to bear investigation. Much stress has been laid on the fact that between a third and a fourth of the total recruits are rejected for medical reasons. On this point it is interesting to note that Sir J. McGregor reported in 1852 that "out of 613 men enlisted, almost all of whom came from Birmingham and five other neighbouring towns, only 238 (*i.e.* about one-third) were approved for service." Dr. Armstrong recorded that in 1844 in the Leeds district half the recruits were rejected. The only cause which has produced a greatly increased number of rejections in recent years is dental defects. Decayed or imperfect teeth have proved in the South African and other recent wars a very frequent cause of disablement of soldiers, and it is not surprising, therefore, that Medical Officers have become more strict in their examinations of recruits in this particular.

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* An Address given at the University Extension Club, Brighton, Nov. 27, 1903.

It is likely that our altered habits of food have led to some increase of dental caries, though even this point is open to doubt. It was common among the Romans. In 23 Roman skulls examined in York 18 exhibited caries; and it was found in 28·6 per cent out of 143 skulls examined in British collections of Roman skulls in nine museums; in 33 per cent of a total number of 36 skulls of Egyptian mummies; and in 37·5 per cent of 64 skulls in Yorkshire barrows, chiefly of the earliest dolichocephalic race, probably cannibal, and pre-Celtic.

We come next to such figures as are contained in the Report of the Scottish Royal Commission mentioned above, and in earlier reports of the Anthropometrical Committee, etc. The figures of height and weight of school children in Edinburgh and Aberdeen, for instance, show marked inferiority in the Edinburgh children; and the earlier statistics show similar differences in different social strata. Do these figures, however, justify the remark in the Report of the Royal Commission (page 25) that "there exists in Scotland an undeniable degeneration of individuals of the classes where food and environment are defective"? Degeneration from what? For our present purpose the statement I have quoted is beside the mark. If it implies that the Edinburgh children have degenerated as compared with a past generation of Edinburgh children of the same social stratum the statement is unsubstantiated, and this is the point with which we are concerned. To say that the poor are punier, smaller chested, and thinner than the well-to-do is to state a sad commonplace, but it does not help us in determining whether there has been any "degeneration." We are driven back upon our main question. What evidence is there that the mass of the population—*i.e.* the artisan and labouring classes—have degenerated as compared with the mass of the last or previous generations? The national physical stature has increased, if we may judge by the evidence of the skeletons in our anatomical museums or of the armour in our mediæval museums. There is not, so far as I am aware, any valid evidence of physical degeneration of the community. Apart, however, from stature and girth, it is conceivable that the community may have degenerated in general health, have become more subject to enfeebling diseases, and have had its average span of life contracted. I leave out of account the obvious evidence of improved physique and health in the men, and still more in the women, of the upper and middle classes. Our problem, like all problems of national health, must be solved in accordance with the conditions of life of the wage-earners, who compose the vast majority of the total population.

When the problem is thus stated, obviously factors are at work which, in the absence of countervailing circumstances, tend towards degeneration. Chief among these is the increased urbanization of the population. Whereas in 1861, 37·7 per cent of the total population of England and Wales was rural, in 1881 the proportion had declined to 33·4 per cent, in 1891 to 28·3 per cent, and in 1901 to about 25 per cent. This bears on the question of degeneration, because the death-rate, and so far as can be ascertained the incidence of sickness, is greater in towns than in country districts. Again, although domiciliary overcrowding may be as great in a country village or remote hamlet as in a densely populated town, the chances of acquiring the infection of the acute infectious diseases, and probably also of tuberculosis, are much greater in the latter. Apart from such infection, the atmosphere of towns is more dusty, more contaminated with organic matter, and less invigorating than that of rural districts; and the sun is prevented from exercising its beneficent effects in crowded streets and houses. But against this fact is to be set the very important fact that the urban has declined more rapidly than the rural death-rate, *i.e.* to the extent of 28 per cent as compared with 23 per cent. The urban death-rate was 24·7 per 1000 in 1851–60, and 1·77 in 1901; the rural death-rate 19·9 in 1851–60, and 15·3 in 1900. In 1851–60 there were 124 deaths in town districts for every 100 deaths in equal numbers living in country districts. In 1901 this proportion was 116 to 100. The substitution of industrial for agricultural occupations, and of factory and workshop for home industries, is a phenomenon involved in the increased urbanization of the population. Such occupations are necessarily less healthy than outdoor occupations. They are, however, much less unhealthy than formerly, as the conditions under which they are being carried on are being rapidly improved. They are, as already seen, consistent with a declining urban death-rate, this being now lower than the former rural death-rate.

It may be assumed for the purpose of my argument that the amount of sickness is fairly proportional to the number of deaths;* and that physical degeneration is proportional to the amount of sickness. But the urban death-rate is now lower than the rural death-rate of ten years ago. Had it been higher than the former rural death-rate it would have been probable that degeneration was going on. Under present circumstances the *onus probandi* lies with those who believe that there is degeneration.

But it is urged the *increased stress of modern life* must tend towards national degeneration. It is doubtful if increased strain exists in the community as a whole. Each adult, as he becomes year by year more deeply involved in the battle of life, comes to the conclusion that the general strain of life in the community is increasing, forgetting that the same causes operated as life advanced in previous generations. There is reason for thinking, with Dr. Pye-Smith, that much of the evil ascribed to "over-pressure" is really due to over-feeding and drinking. Assuming, however, that over-pressure exists in certain stations of life, *e.g.* among city merchants, medical men, etc., it cannot be said to exist generally among professional men. Clergymen, lawyers, and civil-servants are, as classes, long-lived. Even assuming that over-pressure exists throughout the whole of the professional and mercantile classes, these do not form the mass of the community. *The majority of the population of England and Wales belong to the wage-earning classes*, and the conditions of these classes will therefore necessarily have the greatest influence on the total result. What are the facts as regards these classes? They may be gathered from an important address by Mr. (now Sir R.) Giffen.† He shows that the wages of the agricultural labourer have increased, while his hours have decreased. In the textile, engineering, and house-building trades he shows that the workman gets from 50 to 100 per cent more money than fifty years previously for 20 per cent less work. He sums up in the following general statement: "While the workman's wages have advanced, most articles he consumes have rather diminished in price, the change in wheat being especially remarkable, and significant of a complete revolution in the condition of the masses. The increased price in the case of one or two articles—particularly meat and house-rent—is insufficient to neutralize the general advantages which the workman has gained."

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* The only evidence to the contrary appears to be the increasing claims on the funds of certain Friendly Societies. This is probably explicable on the ground of increasing readiness to "go on the club," rather than on actual increase of real sickness. In this respect it is likely that increased urbanization has been injurious to these societies. In large towns the pressure of the good opinion of neighbours and friends is less potent than in smaller communities in preventing too ready resort to "club pay."

† "The Progress of the Working Classes in the last Half-Century," by R. Giffen, F.R.S. (Inaugural Address, Statistical Society, Session 1883-4).

It is urged again that the very measures which have caused the survival to adult life of a much larger proportion of the children born than formerly occurred must have led to a deterioration of the average health and physique of the population. In 1851–60 the expectation of life (*i.e.* mean after lifetime) at five years of age for boys was 50·2 years, in 1881–90 it had increased to 52·7 years; while for girls at the same age it had increased from 50·9 to 54·7 years; and this improvement in the prospects of future life was not caused merely by a large saving of children's lives, but by an increased number of survivors right into advanced life.

In Brighton we can compare 1881–90 with 1891–1900, and, with the exception of the first two years of life, the number of survivors at every age out of a given number born has increased in the latter period. Out of 100,000 of each sex born there were, in 1891–1900, 2,085 more male survivors and 1,974 more female survivors at the age of forty-five than at the same age ten years earlier.

But it is argued that, owing to the saving of life in the earlier years of life—a saving which has been especially in zymotic diseases and phthisis and other tubercular diseases—there has been a larger number of weakly survivors, who would under the former *régime* have been carried off by these diseases. In other words, the operation of the law of the survival of the fittest has been impeded, with results unfavourable to the health and vigour of adult life. This argument assumes that weakly children are more prone to attack by infectious diseases than robust children, an assumption which experience does not confirm.* These diseases appear to attack the majority of children, weakly or robust, who are exposed to their infection. It might be reasonably expected, therefore, that with a decrease in the total deaths from infectious diseases, there would have been at least a corresponding decrease in the number of those who are left maimed by an attack of one of these diseases to survive to adult life. The weeding-out of weakly lives, caused by the greater mortality among weakly children suffering from an infectious disease, is, in my opinion, counterbalanced by the greater number of children made weakly in former times by non-fatal attacks of an infectious disease. The case for deterioration of the race by survival of patients who would formerly have died in early life from phthisis and other tubercular diseases appears to be a stronger one. It is probable that a larger proportion of phthisical patients are cured than formerly. It is probable also that many more children with a strong tendency to phthisis, or even suffering from its early symptoms, are prevented by the improved medical treatment and the improved social conditions of recent years from developing the disease. These now may survive to adult life and become the parents of children with a strong tubercular tendency. Such a fact need not, however, cause any serious apprehension, for two reasons. In the first place, hereditary tendencies to phthisis only act under favourable predisposing conditions, such as damp and overcrowded houses, sedentary occupation in a cramped position, etc.; and in presence of the active exciting agent, the specific bacillus to which phthisis and other tubercular diseases are due. The exciting cause of tuberculosis is the introduction *ab extra* of the specific infection by inhalation or by means of food. In the second place, assuming that more phthisical patients survive than formerly, is it not equally true that fewer persons *become* phthisical than formerly? With a diminution of the active cases of phthisis, the number of centres for phthisical sputum, which, as dust, is the chief cause of subsequent infection, must have diminished to a corresponding extent. Of the fact that the predisposing causes of phthisis—damp and overcrowded houses, ill-ventilated workshops, etc.—are steadily diminishing, there is evidence on every hand. It is, therefore, reasonable to suppose that much at least of the deteriorating effect of survival of tubercular persons is counterbalanced by the large number of persons who are *prevented by improved sanitary and social conditions from becoming tubercular*. It is premature at present to attempt by statistical means to determine how far the counteracting influences which are at work balance each other, or, failing a balance, on which side is the preponderating effect.

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* It may be, however, that although possibly not more prone to attack, weakly children are more likely to die when attacked by an infectious disease. But against this also must, as indicated above, be set the consideration, that if the prevalence of an infectious disease is diminished, the number of originally strong children left enfeebled in constitution by an attack of the disease, will be at least correspondingly diminished.

If it be agreed that the evidence of physical degeneration of the population does not bear investigation; that the tendency in this direction of the increased amount of town life is counteracted by the improved conditions of this life; that the stress of modern life is possibly rather in the direction of upraising than of declension; and that the possible effect of survival of children who formerly would have died on the physique of the community is at least counterbalanced by the improvement in physique caused by the upraising of the general standard of health, we need not spend much time in discussing the factors which have made for national improvement.

First and foremost among these must be mentioned the cheapness of food. As the price of wheat has gone down, so likewise and almost *pari passu* has the death-rate from consumption.

ENGLAND AND WALES.—PERCENTAGE DEVIATION IN EACH PERIOD OF PRICE OF WHEAT AND DEATH-RATE FROM PHTHISIS,

FROM THE AVERAGE OF THE ENTIRE PERIOD, 1838–1900, STATED AS 100.

Periods.	Deviation of Price of Wheat in each Period from the Average.	Deviation of Death-rate due to Phthisis from the Average.
1838 42*	+41	+72
1851–55	+21	+26
1856–60	+16	+15
1861–65	+ 3	+12
1866–70	+19	+ 8
1871–75	+19	− 2
1876–80	+ 3	− 9
1881–85	−13	−19
1886–90	−32	−28
1891–95	−39	−35
1896–1900	−38	−41

The reason for the coincidence between the decline in the price of wheat and in the death-rate from phthisis is not far to seek. The more abundant and cheaper supply of food has doubtless improved the physical condition of the population and made them less susceptible to the inroads of tuberculosis. It is not, however, simply and solely a question of cheaper food, though this forms a convenient index of improvement. The English population as a whole has increased its standard of comfort, and has become able to afford not only more abundant, more varied, and more wholesome food, but is also better clad and better housed than it has ever been in the past. It cannot, in short, be maintained with any approximation to fact that the majority of the English population live now under conditions of greater strain and stress, or that poverty is more

* Statistics as to phthisis are unobtainable for the years 1843–49.

prevalent than formerly. I need not dwell on the influence of improved sanitation, on the diminution of overcrowding, the higher standard of cleanliness, etc.

Adverse Features.—While noting the factors of improvement which immensely outbalance those of deterioration, one must not lose sight of the adverse features still remaining. Seventy-five per cent of the people have working-class incomes. It is the conditions influencing these which will weigh most in producing the total result. There are among these certain conditions which undoubtedly make for degeneration. Foremost and greatest among these, and the only one that can now be considered, must be placed the *consumption of alcoholic liquors.* We spent in the year ending March 31st, 1901, £189,000,000 on alcoholic drinks. The indirect cost or loss of income is not reckoned. This is greater than the amount spent in rates and taxes; it is almost as great as the amount spent in rent; it is six times as much as was spent on State-aided education. Furthermore, this amount was spent by 55 per cent of the population. This is a greater amount than formerly. More is drunk, though there is less drunkenness. The money thus spent is almost entirely wasted money. Alcohol is a protoplasmic poison. No one thinks of taking it when work is required. It diminishes the powers of both mental and muscular work even in moderate doses. It is the main cause of insanity and of crime. It is one of the chief causes of our poverty and pauperism. The consumption of alcohol is a powerful corrective of the notions of improvement caused by higher wages. These ought to have meant a higher standard of comfort throughout the working classes. They have meant this to a very great extent, and would have done so much more had it not been for the more general consumption of alcoholic drinks. The surplus has too often been spent in liquor, which might have prevented overcrowding—provided decent housing with all the possibilities of decency and propriety. It is a sad reflection that every flood-tide of national prosperity is associated with a corresponding flood-tide of indulgence in alcoholic drinks, and that the depression of national trade is a more potent cause of temperance than all our teetotal and temperance societies put together! The reason for this is not far to seek. The social instincts of mankind are strong; his interests beyond his appetites have not been properly cultivated; and failing these he falls back on his appetites. The problem is in fact a moral problem and must be faced as such.

THE SUPPOSED DETERIORATION AND DECREASE OF OUR POPULATION IN RELATION TO OVERCROWDING IN HOUSES.*

By HENRY E. ARMSTRONG, D.Hy.,
Medical Officer of Health, Newcastle-upon-Tyne.

When the Bishop asked the writer, some months ago, to prepare a paper on the above subject for this Conference, the latter accepted the invitation with misgiving. On the one hand he questioned the existence—at least to any noteworthy degree—of progressive deterioration of the English people; and on the other he believed the data available for gauging the influence of overcrowding in houses on constitutional stamina to be insufficient for the purposes of satisfactory evidence. Under these circumstances he would perhaps have acted prudently in wriggling out of the procrustean bed in which his acceptance of the task had placed him. That he had not done so, but, instead, is about to treat of the causal relation of a certain sanitary evil to a social condition whose existence he disputes, may possibly be interpreted as an argument in his own person of the fallacy of his contention. In like manner, the overweening desire to make out that our nation is going to wreck and our population deteriorating, which certain persons encourage, may itself be an indication of degeneracy on their part.

The conclusion of the Inter-Departmental Committee on Physical Deterioration is stated in their recently issued Report as follows:—

"The Committee hope that the facts and opinions they have collected will have some effect in allaying the apprehensions of those who, as it appears, on insufficient grounds, have made up their minds that progressive deterioration is to be found among the people generally."

This highly satisfactory pronouncement naturally throws into the shade the opinions of a single individual whose personal opportunities of observation are merely local. It helps nevertheless to establish the conviction he holds, after a somewhat extended experience of sanitary life in Newcastle, that the health and physical stamina of the citizens, whether considered collectively or in different classes, are better to-day than they were thirty years ago. In support of this statement the following table of death-rates from (1) All causes; (2) Zymotic diseases; and (3) Of infants, is submitted.

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* A Paper read before the Diocesan Conference at Newcastle-upon-Tyne, on October 11, 1904.

CITY AND COUNTY OF NEWCASTLE-UPON-TYNE.

RATES OF MORTALITY PER 1,000 POPULATION.

	All Causes.	Seven chief Zymotic Diseases.*	Rates per cent of deaths under 1 year to births registered.
Average for the decade 1870-9 ...	26·2	4·7	17·8
" " " 1880-9 ...	23·5	3·1	16·3
" " " 1890-9 ...	20·6	1·96	17·3
Average for the 3 years, 1900-2 ...	20·0	1·7	16·2
Year 1903	18·6	1·1	16·6

Typhus.—At the beginning of the above period, *Typhus Fever* was endemic in the city. For the past ten or fifteen years it has been a rarity. There has not been an epidemic of *Enteric* (*Typhoid*) *Fever* worthy of the name during the whole of the time. The only special outbreak of that disease during the past fifteen years occurred in 1897–8. It was quite limited in extent and was soon extinguished. For years the enteric wards of the fever hospital have remained almost empty.

Scarlet Fever thirty years ago was a disease with a mortality of often 20 per cent to cases. For the last five years the mortality to cases has been 3·5 per cent.

Speaking without anthropological data (which are not available), it is believed that the children of the poor of Newcastle are as well developed, both in body and mind, as those of the same class elsewhere, and even better so than many. Certainly they are not ricketty to the extent that is so painfully obvious in the slums of certain other large towns.

On the threshold it is well to consider the wide range of the theme involved in the title of this paper. The term "deterioration of the population" applies to the intellectual, moral, and physical position of the race, its classes, and its individuals. The word "houses" may, apart from abodes of good and average character, be considered to include tenement dwellings, common lodging-houses, and schools (especially those for infants). "Overcrowding of houses" means, in towns, anything from the cramming of individual rooms with people, or of tenement houses with several families, to the crowding of such houses together on the large scale. The extent to which the former is affected by the latter is matter sufficient for the occupation of Royal Commissions for the next half-century, and cannot be fairly dealt with in the few pages of a hurriedly written paper.

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* *i.e.* Small-pox, scarlet fever, measles, whooping cough, diphtheria, "fevers" other than scarlet), and diarrhœal diseases.

INDICATIONS OF DETERIORATION OR OTHERWISE OF THE POPULATION.

Is degeneration originated in physical or in mental conditions? Is there any relation between social development and individual cranial capacity? Is it true that intelligence may increase whilst cranial capacity diminishes? These are questions for anthropologists to determine. "The capacity and circumference of the average criminal skull is smaller than that of ordinary men, according to the positive school of experts." * Lombroso found the weight of criminal skulls to exceed, indicating larger bony structure, whereas Drs. Baer and Ranke came to a diametrically opposite conclusion.*

Hatters affirm that their customers require hats of a larger average size now than was the case twenty years ago. If this is so, does it indicate that the brains of the present day are larger, or that the skulls are merely thicker than before? There is a general opinion that the feet and hands of the rising generation are larger than those of their predecessors. If so, this is doubtless due to increased development from playing golf and practising athletics. Glovers are said to have altered the value of the size-numbers of their wares to flatter feminine fancies. The magnitude of the feet of a certain female forms the theme of a well-known modern comic song.

The popularity of football and other athletic games has greatly improved the physical development of our youth. The recent cricket test matches show that in this respect England does not lose in comparison with her colonies at the antipodes. If it be objected that these matches are played by picked men, and do not represent the average powers of the race, the reply is obvious that as we judge of the physical capabilities of ancient races by special examples handed down to us, the same method is permissible with respect to the peoples of our own time.

In a very interesting paper read before the Society of Arts, and published in their journal of March last, Dr. Robert Jones observes that "Physical diseases have their mental accompaniments . . . and there are bodily indications of mental degeneration (stigmata or signs). . . . The presence of a lobe to the ear is a distinctly human characteristic, and a sign of degeneracy is stated to be a tubercle on the helix —referred to and pictured by Darwin. Other bodily stigmata are excessive or diminished stature, chest malformation, rickets, spinal curvature, skin pigmentation, hairy development, its absence, or a deficiency in pigment, misplaced teeth; cleft, highly arched, or narrow palates; convulsions, tics or tremors, speech or gait defects, supernumerary or deficient fingers or toes, and cranial deformities."*

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* Drahms' "Criminal."

An acute facial angle, a prognathous jaw, voluminous and projecting ears, excess of wrinkles, especially over the zygoma, are specified by Lombroso and others as signs of the criminal and a feeble brain.

So much for physical signs of deterioration. What of the mental and moral?

"The use of intoxicants is almost universal among criminals,"* whereas "swindlers and professional gamblers are, as a rule, abstemious as to drink, luxurious livers, prodigal and generous, especially toward those in distress and for religious and moral purposes."* Morphinism ranks next to alcoholism as a prevalent vice among criminals, and a sign of mental degeneration. In a certain prison as many as 44 per cent of the inmates were addicted to it.*

That there is some statistical relation between crime and house-overcrowding few will doubt. But that the latter, though *post hoc*, is *ergo propter hoc*, has by no means been proved. The headlong race for wealth among all ranks and classes of society, and the blind pursuit of the luxury consequent on its possession, are now, as ever of old, among the most serious and widespread signs of racial deterioration, not only in this country but in others. The recognition of so-called "new diseases" is in most instances a proof of the advancement of science and the special intellectual development of the discoverer, rather than evidence of race-deterioration in the persons among whom they are found. In like manner the higher recorded mortality from tubercular and other diseases is often attributable to improvements in diagnosis, and does not necessarily indicate actual increase in the death-rate from those ailments.

The increasing prevalence of small but often energetic parties in the community who make it their business to set themselves up in opposition to recognized law, authority, and progress, and who are often to be recognized by the title of "anti" this, that, or the other, is strikingly characteristic of the age, and indicates degeneration in at least the individual members of these parties.

HOW IS DETERIORATION TO BE ESTIMATED?

The returns relating to crime in this country† show a greatly diminished proportion of indictable offences for the year 1901–2 as compared with the average for the previous decade. On the other hand the rate of non-indictable offences has risen considerably in that time. Periodical comparisons of statistics referring to criminals and drunkenness are always fallacious, from the fact that the increase and diminution in the figures of each class is in the main due to the greater or less energy of the police, the state of trade, the effect of licensing laws, etc. Those referring to lunatics will doubtless depend largely on the relative efforts made to remove the mentally affected to asylums. In like manner the fear of race deterioration, based on the large proportion of recruits recently rejected as physically unfit for the Army, is allayed on evidence of witnesses of the highest authority. Thus Professor Cunningham, President of the Anthropometric Committee of the British Association, states his opinion that perhaps the most unreliable evidence is that obtained from the recruiting statistics, "because the class from which the recruits are derived varies from time to time with the conditions of the labour market."* Surgeon-General Sir William Taylor, Director-General Army Medical Service, "most emphatically disclaimed any responsibility for the deductions that had been drawn from the figures published by his department. He appeared to attach very little value to the figures. . . . Both the Director-General and the late Inspector-General of Recruiting were fain to admit, on being pressed, that the real lesson of the recruiting figures was the failure of the Army, under present conditions, to attract a good type of recruit. . . . One of the men rejected had presented himself with the same result at four different recruiting stations."*

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* Drahms' "Criminal."

† "Judicial Statistics, England and Wales, 1902."—Criminal statistics.

How far are anthropological returns available, and to what extent are they reliable as indications of degeneration or the reverse? The statistical measurements of height, weight, skull dimensions, and other physical conditions of different classes of the community at present available, are all of recent date, and hence, however useful they may become in course of time, are of little value at present for the purpose of comparison. There can be no question, however, of the utility of adopting the recommendations of the Interdepartmental Committee with respect to the organization of a permanent Anthropometric Survey, having for its first object "the periodic taking of measurements of children and young persons in schools and factories," . . . and besides this "a more comprehensive and specialist survey . . . of the country at large."*

INFANT MORTALITY IN URBAN AND RURAL DISTRICTS COMPARED.

The question of infant mortality is one of great importance in relation to the subject of deterioration of race, and on this point statistics of the most comprehensive and reliable character are at hand. As showing the effect of town life compared with country life, Dr. Tatham, of the General Register Office, laid before the

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* "Report of the Interdepartmental Committee on Physical Deterioration."

Interdepartmental Committee tables comparing the infant mortality in ten urban counties (*i.e.* counties containing large towns) with the corresponding returns for seventeen rural counties. In these tables two quinquennial periods were taken for comparison, *viz.* that of 1873–7, and that of 1898–1902, or a quarter of a century later. Dr. Tatham points out that the most striking feature of one of his tables is "the comparatively small change during the twenty-five years in the death-rates from all causes. . . . In the years 1873–7 the rates in the urban counties were higher than those in the rural by 26 per cent among male, and by 29 per cent among female children; while in the years 1898–1902 the differences had increased to 30 per cent and 34 per cent respectively. . . . Epidemic diseases were less prevalent in the recent quinquennium than in the earlier one; small-pox, scarlet fever, diphtheria and croup, and erysipelas showing a decline among both male and female children in the rural counties. Whooping cough also showed a decrease of more than 10 per cent in the urban counties, but an increase of nearly the same amount in the rural counties, while measles showed an increased fatality among children of each sex and in both groups of counties. In the aggregate the mortality from epidemic diseases during the later as compared with the earlier quinquennium is reduced by nearly one-fourth in urban counties. The causes contributing to keep the total infant mortality at about its former level were principally diarrhœal diseases, diseases of stomach, liver, lungs, premature birth, and congenital malformations. The increased mortality from the two latter causes and from diarrhœal diseases is very marked. From premature birth and congenital defects the increase, though numerically smaller, . . . was proportionally greater, having increased by 67 per cent in the urban, and by 74 per cent in the rural counties. The increased mortality from diarrhœal diseases is probably attributable in great part to the prevalence of artificial infant feeding."*

THE "HOUSING QUESTION" IN RELATION TO RACIAL DETERIORATION.

For the purposes of this paper the term "housing" may be taken to refer to the habitations of the poor (*i.e.* tenements of three and less rooms each) and schools, in which the children from these dwellings pass a large portion of their daily life.

The census returns show that in the county of Northumberland, including the city of Newcastle, the increase between 1891 and 1901 in *total* number of separate tenements of all kinds is 21·4 per cent. Tenements of *five or more* rooms increased at the rate of 29·8 per cent, whilst those with fewer than five rooms increased at the rate of

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* "Report of Interdepartmental Committee."

19·3 per cent. In actual numbers the tenements of one room each *decreased* from 12,758 to 10,028, whilst those of two rooms increased from 34,936 to 35,909; and those of three rooms each from 20,681 to 29,957.

At last census there were in Newcastle 26,852 tenements of one, two, or three rooms each. Of the single-room tenements (4,249) 680 were occupied by a single person each, 1,195 by two persons each, 930 by three persons each, and 722 by four persons each. The remainder (722) were occupied by from five to nine people each, with one exception, in which there were ten persons.

Most of the poor who occupy single rooms do so because they cannot afford the rent and furniture for tenements with more accommodation. From personal inquiry as to the financial means of small-pox "contacts" during the present epidemic, the writer has ascertained that a considerable proportion of persons in receipt of good incomes occupy small tenement dwellings of two and three rooms each. In six of such cases occurring recently, the wages earned by the family ranged from £2 14s. to £4 4s. 6d., or an average of £3 11s. per week. Another instance is that of a hawker earning £4 a week who lived in a common lodging-house.

It does not follow that there is overcrowding because a family occupies only one room. Room-overcrowding is defined by law, and means, in day rooms, an allowance of *less* than 400 cubic feet for each person over ten years of age, and half that amount for each child of ten years and under; and in rooms occupied solely for sleeping in 300 cubic feet per person over ten, and 200 cubic feet for children of ten years and under. A single room of 12 feet square by 9 feet high may be occupied with health and decency by a married couple and two young children. It would undoubtedly be better if every family could have more than one or two rooms to live in, but how is that to be brought about? Philanthropists and other well-meaning persons declaim against overcrowding in towns (which is truly one of the most serious sanitary evils of the age), and point out remedies; but they seldom provide the means necessary for carrying these remedies into action. A close watch is kept by the Inspectors of the Newcastle Health Department to prevent overcrowding in tenement dwellings. The number of cases detected during the five years ended 1898 was 230, and in the subsequent quinquennium it was 179.

With respect to the question of the effect of life in tenement dwellings on the intellects of school children, the Report of the Royal Commission on Physical Training (Scotland),* shows that in point of mental capacity schoolboys in Aberdeen from one and two-roomed houses are " on an average appreciably better than those from houses of four rooms and upwards, who were in turn better than boys from three-roomed houses. . . . The largest proportion of apparently well-nourished children came from three-roomed houses, and the largest proportion of ' thin children ' from houses of four rooms and upwards."

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* "Appendix" by Professor Matthew Hay, M.D.

" Housing " is a gauge of everything that distinguishes the poor from the rich, especially as regards the means of providing food ; and food is the main necessary to development. Degeneration, disease, high death-rate, and crime, though common in connection with overcrowding, are less its result than that of the circumstances which lead to it.

It is a satisfaction to know that the physical effects of poverty and insanitary housing are not permanent, transmissible, or productive of progressive degeneration of race.

The evil effect of overcrowding on health is everywhere recognized, but a few statistics on this point may not be out of place here. The general death-rate in one-roomed tenements " in Glasgow (which are the most unwholesome abodes of humanity known to the writer) is nearly twice that of the whole city, and the death-rate from pulmonary tuberculosis is 2·4 per 1,000 in one-roomed tenements, 1·8 in two-roomed tenements, and 0·7 in all other houses." *

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Sir Shirley Murphy, Medical Officer of Health for London, showed that " in seven groups of districts with an increasing amount of population living in overcrowded tenements, the infant death-rate has followed the increase " * (from 142 per 1,000 to 223 per 1,000).

A few words on the very wide subject of school life as a phase of the question under consideration. And first as to the system of education and its results. It is only a short time since Mr. Helby, Chairman of the Finance Committee of the Metropolitan Asylums Board, is reported to have stated his opinion to the effect that the present School Board system, in conjunction with " the drink curse," is the chief cause of the increasing imbecility of children, through the class of instruction being too high for the mental capacity of the scholars. Whether or not our young people are really degenerating, the writer is strongly of opinion that " education," as it is called in Board schools, which is in reality only cramming, is often overdone, unjustifiable, and harmful. What but injury, both bodily and mental, can result from sending a child of three or four years of age to school ?

* "Report of Interdepartmental Committee on Physical Deterioration," p. 17.

Why! it ought to be developing its frame in the open air and acquiring moral principles at home at that age, and for some years later! Some of the ablest men of the time, including the late Herbert Spencer, have had no regular "education" until they were eight or ten years old. Probably by far the most serious aspects of the "School-housing question," apart from the dazing of young minds, are the mischief to the tender bones of little children from long confinement at school-desks of unsuitable height, causing spinal curvature; and the ruin of their eyesight by defective lighting of class-rooms, which is the cause of so many young people in England and Germany having to wear spectacles.

It is generally admitted that infectious diseases, and especially measles and chicken-pox, are principally spread through very young children attending school; and in the case of scarlet fever and other zymotic diseases, the school is the first place suspected as the source of infection. A somewhat startling light is thrown on another side of the Education system in its relation to deterioration of race, by the Blue Book on Crime for the year 1902 in which (p. 41) it is stated that "though a generation has elapsed since the present educational system was established, and the great majority of the persons convicted have grown up under it, the degree of instruction of most of them . . . is singularly backward. . . . In 1902, about 17·5 per cent of the prisoners could neither read nor write; in 1901, 18·4 per cent. . . . In Pentonville, out of a total of 14,170, no fewer than 12,594, or six-sevenths, could either not read or write or could do so only imperfectly."

In an article on the subject at present under consideration, failure to refer to the "population question" would be a grave omission. Time, however, only allows of it being barely touched upon. What is termed the "urbanization of the people" is at the root of all the evils arising out of overcrowding, in house and on the ground, in towns, not to speak of its harmful results through rural depopulation. It is said that three times as many persons in this country live in towns to-day as did fifty years ago; but in reference to urban districts it is reassuring to know that "the term 'urban' merely means those districts which for the purposes of local administration have an urban organization, and that a large portion of the urban population is living under conditions as healthy as any that obtain in rural districts, and indeed enjoys superior advantages. . . . Further, it is the case that towns have now a death-rate which is lower than was that of rural districts fifty years ago."*

Apropos of housing and its reverse, we learn from the Blue Book on

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* "Report of the Interdepartmental Committee on Physical Deterioration" p. 16

Crime already quoted, of an increase in the number of vagrants. The convictions for begging and sleeping out have varied considerably during the ten years ended 1902, but attained their maximum (17,766) in the last year of the decennium.

REMEDIES.

More remedies have been proposed and preventives suggested for the evils which form the theme of this paper than can well be enumerated. Many appear beautiful in theory but are impracticable, at least in this age. Among other things to aim at, perhaps among the best are : (1) *For the young* : The encouragement of manly open-air sports, the establishment of physical training and playgrounds in Board and other schools; the prevention of children under seven years of age from attending Board schools; the real education (*i.e.* the drawing out of the minds) of school children, in contradistinction to the filling of their heads with facts and details, most of which are worse than useless to them; the teaching of cooking and domestic economy. (2) *For adults and others :* The demolition of insanitary areas and houses unfit for habitation *at the expense of the owners.* With regard to overcrowding, the Committee on Deterioration rightly recommend that overcrowded houses should be dealt with as nuisances, and their occupation beyond specified limits strictly prevented. The provision, out of the rates, of dwellings for the working classes is, theoretically, fine; but if begun where is it to stop ? At the present time there are about 10,000 persons in Newcastle in need of better housing accommodation than they can afford to get for themselves. For the municipality to meet the needs of say one-tenth of these, and leave the rest as they are, does not look fair, does it ? And how can the matter be otherwise dealt with ?.

Life in the country should be encouraged, and the urbanization of the population discouraged in every possible way.

THE HOUSING OF THE WORKING CLASSES ACTS, 1890 to 1903.—The Local Government Board have issued an order under subsection (2) of section 8 of the Housing of the Working Classes Act, 1903, prescribing forms in proceedings relating to closing orders under the Acts in substitution for those in the fourth schedule to the Housing of the Working Classes Act, 1890.

SCHOOLS OR NURSERIES ?—The Medical Officer of Health of Burnley says that the infant schools there are little more than nurseries, that teaching children three years old and under is a farce, and that their congregating together strongly disposes to the spread of measles and whooping-cough. He considers that the Board of Education cared little for infants of tender age or it would not pay for their attendance at school. The school inspectors don't care and parents don't care ; there is only the health committee of the corporation left to protect them.

DO INFANT SCHOOLS IMPROVE THE MENTAL AND PHYSICAL CONDITION OF THE CHILDREN?*

By DANIEL JACKSON, M.D., J.P.,
Medical Officer of Health, Hexham.

Do Infant Schools improve the Mental and Physical Condition of the Children—I mean such schools as are under public control? When I undertook to bring this matter to your notice, I had been attracted to the subject by a casual visit to an Infant School; since then I have visited a number of such schools, chiefly in country or small urban districts—extending from the east to the west of the county—schools which I should consider typical of what may exist in the country generally, and such as would enable one to form a judgment upon the condition in which they may be found during the year. As my visits were made in fine dry weather, when the outer doors were open, and there was no inducement to have the windows shut, I saw them to the best possible advantage. The children looked contented, the teachers were attentive and willing to give the information I sought, expressing their own views, giving me the benefit of their experience, which in some cases was varied and extensive.

I do not consider that we, as Medical Officers of Health, have any *locus standi* to interfere directly with such schools: but as a body of experts having the welfare of the people at heart, and our *raison d'être* being the improvement of the public health, so that thereby the nation may be benefited by the maintenance of a higher standard of physical development, as the ground-work on which to cultivate a higher intelligence, we may not be exceeding our duty by giving an expression of opinion. At any rate the subject is an important one, and if I should be so fortunate as to excite such an interest in it, in any member of this branch whose opportunities are greater than mine, as to induce him to look seriously into it, my object will have been attained.

School Buildings.—Although in this I am not concerning myself with the school buildings, I may say they appeared to be well cared for, and the ventilation as good as their structural conditions would allow, but not such as would satisfy Medical Officers of Health.

Condition of the Children.—The children, as I have mentioned, were apparently contented, but there seemed to me to be something wrong in these little creatures being pressed into as small a compass as possible, leaning over a desk, attempting to put something on to a slate or a piece of paper; or mechanically repeating something after their teachers, when they should have been out-of-doors revelling in the sunshine, having every muscle in their bodies exercised at play. The only commendable part I saw was their being drilled out of doors, which I was fortunate enough to see at one school. I arrived some minutes before the forenoon interval, and the conversation with the head mistress turning upon drill, she favoured me with an exposition of it, with which I was much pleased. Still unrestrained action is much to be preferred, and I agree with those who think that until the child reaches at least seven years of age, there is not only no necessity for physical drill, but it is a mistake if allowed to take the place of absolutely free playful action, which is conducive alike to healthy bodily and mental development, such action being necessary if that much-coveted condition is to be obtained—a *Mens sana in corpore sano.*

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* Read before the Northern Branch of the Incorporated Society of Medical Officers of Health, Oct. 28th, 1904.

Unless the nervous and muscular systems are cultivated harmoniously and conjointly, the result is apt to be a one-sided, peculiar, eccentric being; on the one side it may be pointing to genius, on the other depravity.

Hours of Attendance.—I understand the hours of attendance are from 5½ to 6 hours a day on 5 days a week, and 3 hours on Saturday. Consider what restraint to that extent means to active, restless children, who naturally are never quiet. Those of you who have been in practice must be familiar with the phrase, "he is never quiet," they are never out of an ill turn; this is Nature's way of teaching them, to bring the nervous and muscular system into harmonious action, flitting from one thing to another without fixed attention, while exercising, not exhausting, either system. Whereas in school they are cramped in body, wearied and jaded in brain, by strained attention in a deleterious atmosphere.

Teachers' Opinions.—The teachers with one exception were unanimous, that the children who came later to school (that is at 5 years and over) quickly shot ahead of those of the same age who came as babies (*i.e.* at 3 years), and had a keener grip of their work all through their school career; that those who came as babies were blunted or incapable of the same mental concentration; by the time they entered the upper school they were tired of it, ceased to take an interest in their work and wanted to leave; in fact they considered that the time between 3 and 5 years was worse than lost. They therefore did not advise that children should come to school before 5 years of age, and some experienced teachers thought that too soon.

Medical aspect.—We are all aware that a large gathering of young children is frequently followed by an outbreak of infectious disease. How much more likely, or rather how certain is this to take place when you have children from 3 to 5 years huddled up together, day by day, and week by week, in a badly-ventilated school. From 3 to 5 years is not only the period of greatest frequency of such disease, but is also the most fatal. The admission of these babies to school has done much to favour the spread of infectious disease of all kinds and to increase our difficulties; our wish has been to avoid bringing them together under 5 years of age, in order to evade the most infectious and fatal period. Certain forms of infectious disease (measles for instance) have, in spite of all our efforts, increased during the last twenty-five years, the cause of this being generally considered the lowering of the school attendance age from 5 to 3 years. It is true the law does not require this early attendance, but Government grant is paid for it. As a consequence, school authorities do their best to keep up the attendance, and lazy mothers take advantage of it to get rid of their children during school hours. As a result of this we have increased spread of infectious disease, consequently increase of preventable deaths; the mental and physical condition of the children is not improved, but on the contrary is blunted and stunted; and the all-enduring tax-payer is mulcted of a million and a quarter of money per annum at least.

WE REGRET to chronicle the death on Dec. 10th of Dr. D. Astley Gresswell, Permanent Head of the Health Department and Chairman of the Board of Public Health of the Colony of Victoria. Dr. Gresswell was educated at Christ Church, Oxford, where he held a junior studentship and took a first class in natural science. He worked under the Metropolitan Asylums Board as Medical Officer at Stockwell and Homerton Fever Hospitals, and also on the small-pox ships. Dr. Gresswell was the author of a work on scarlatina, and was engaged in original research before he took his Australian post fifteen years ago.

WE REGRET also to record the death of Dr. Francis Henry Blaxall, retired fleet surgeon, R.N., and late Medical Inspector to the Local Government Board, in his 79th year. Dr. Blaxall took an active part in the central organization of the administration of public vaccination necessitated by the Vaccination Acts of 1867–71, and was also largely occupied in connection with the formation of port sanitary districts round the English coast and in supervising the administration of port sanitary authorities, particularly as regards their equipment for dealing with cases of cholera and other exotic infectious diseases, which the Local Government Board was then beginning to shape on lines which have now become familiar. Another important inquiry, made by Blaxall in 1881, was into the sanitary aspects of emigration from, and immigration into, the United Kingdom, and the intercommunication which takes place between home ports.

"UNOFFICIAL SANITARY WORK." *

By A. S. NORMAN, L.R.C.P., M.R.C.S., D.P.H.
Medical Officer of Health, Havant Rural District; President of the Southern Branch of the Incorporated Society of Medical Officers of Health.

In a weak moment I undertook the responsibility of this position, partly because I felt that I have at different times partaken of your hospitality, and partly because I felt one must not shirk responsibility.

The feasting of the body is a simple enough matter, and I am pleased to be able to do that for you, but the mental feast I should like to give you is, I am afraid, sadly wanting.

First of all I had great difficulty in thinking on what subject I should like to talk. Most of you are mixed up in matters about which I have no opportunities of knowing anything, and therefore on which I can say nothing. Then I thought, perhaps I know a little law, but law is not an interesting subject to talk about.

I think I could talk for some time of our grievances, but we are out to enjoy ourselves, so I am barred there. Then it occurred to me that there are many things which seriously affect our work, and yet are outside the scope of our work; that make what laws we may, given all the great things we have done for the public—and there is, I think, no question that we have done great work—yet we are of necessity dependent on others for their success. Now, I thought, all will be plain sailing, so I started gaily enough, but I found, as you will soon, that I had little or nothing to say. I ought of course never to have undertaken the work; I haven't the time, and during the last few weeks, when I expected to have a holiday among books and old friends, I have been tied where I could get at neither, so I must crave your indulgence.

For the sake of brevity—a very sufficient reason in these days of hurry—we are divided into whole and half-timers. I am one of those who believe strongly that we ought all to be whole-timers, and I have striven during all my public life to that end with, I must acknowledge, signal unsuccess. There is one particular, however, in which the advantage lies with the half-timer. He is brought into intimate social relationship with all classes of the community. He is present at the birth of the children, sees them through their childhood, attends them through all their childhood's diseases, knows all their surroundings, and has in many instances a good deal to say as to their future walk in life.

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* Presidential Address delivered at Hayling, October 21, 1904.

He hasn't the time to read much, statistical work is probably onerous to him; but he has, as he drives about or sits up at night, much time for thought and observation. If he lives in the country he has an opportunity of observing the incidence of disease in particular localities, and in particular houses and on particular families.

Much of this is denied to the whole-timer, who though his education has been in medicine, ceases at quite an early age, and before he has had any experience of medical work, to treat disease, or to know anything of the working of the house. I think that every intending Medical Officer of Health should have to practise his profession of medicine for a period, before he is allowed to be a Medical Officer of Health. Now it has fallen to my lot to be a half-timer and a general practitioner in a wide country district for upwards of a quarter of a century, and I am beginning to see my children's children come along.

We are told that the race is degenerating—not, I think, on sufficient ground—but that anybody should say so, should cause us serious consideration.

During the past quarter of a century this nation has been brought into competition with many other nations in a way that was absolutely unsuspected, so that it behoves us as persons occupying important positions in that nation, to do all we can to develop whatever is best in it.

During that period we have seen large public water supplies for our towns, open spaces for the recreation of the poor, excellent hospital accommodation provided, bye-laws with regard to the construction of houses, laws for protection of persons engaged in dangerous trades, for the protection of children, infants, and lying-in women, not to mention the enormous sums spent in drainage schemes.

In fact we have done much on what I may call the wholesale scale to improve the condition of the masses. This is the part in which the whole-timer comes in; but in the retail line where the G.P. and the half-timer comes in, there remains, I think, much to be done.

Whether or not there be any truth in the suggestions that we are degenerating, there is no question that we might be much better than we are. Perhaps the Boer War showed that, as regards our men, we are not degenerating, and the streets will show you the same as regards our women, unless the great increase in the size of the female, a condition which prevails in many of the lower forms of life, be taken as evidence of such degeneration.

But is not the enormous increase in caries of the teeth, and in the anæmia of young women, a sign that there is something wrong in our food?

When I was a student we only saw anæmia in young women who lived upon tea and bread and butter and never saw the sun. Now we see it in nursemaids and young ladies, and it is not much more than a sign of youth.

Is not the enormous increase in nervous diseases, a sign that there is something wrong in our mode of life? Is the increase of cancer all our cleverness in diagnosis, or is it a sign that we are degenerating? I ask the question.

We as medical men are accustomed to think of two factors before all others—the infection, or the tendency to the disease, and the power of resistance of the individual.

Is the increase of cancer an indication of lessened power of resistance? Of course one must remember, even when we congratulate ourselves on the lowness of our death-rate, that we all must die; and that if we reduce our deaths from typhoid, tubercle and other diseases and if our surgeons are to turn a man inside out, and do successfully operations which were unknown but a few years since we all must appear in the register.

I read some two or three years ago, and again lately, a most interesting book by Mr. Rowntree of chocolate fame, on the condition of the working classes in York. "Poverty" he calls it: no doubt it is well known to you.

In it he shows from exhaustive examination and much personal knowledge of the working classes in that city, that approximately 10 per cent of the population would be unable to get sufficient food, if they spent every penny earned in the most careful manner possible, if they always bought in the cheapest market, if they had nothing but the plainest dress, no beer, no 'baccy, no pleasures, and never lost an hour's work; and that approximately 20 per cent more, making 30 per cent in all, though receiving sufficient money for bare physical existence, are for various reasons—drink, waste, gambling, and so on—below what he calls the poverty line.

He states, as anyone who has mixed among the poor knows, that in the majority of instances this pinching of food falls, not on the father, since the women perceive the necessity of proper food for the bread-winner, but on the women and children, that is, on the mothers of the future generation, and the workers of the future. Further, he shows that the effect of this is to increase, to double, the general death-rate, to double the infantile mortality rate, to produce an amount of sickness, suffering, and permanent physical degeneration, of which the death-rates are only an index.

And the children in this class at the age of thirteen, when they leave school, average some 3 inches less in height and 11 pounds in weight than children of the working class who have had proper food.

Now the prominent causes for this are drunkenness, laziness, gambling, loss of bread-winners by death or crime, etc., and of course sickness and want of providence generally. Now these are matters which cannot be satisfactorily dealt with by the state, nor are they largely under the influence of the Medical Officer of Health, and yet they are of serious concern to us all.

I think you are not going to do much for drunkenness by legislation, nor do I think you are by pointing out its immorality.

Drinkers are, I think, capable of being broadly divided into two classes: the hopeless drunkard; and the man who, though he may appear to do himself no physiological harm, yet drinks beyond his means. With the former we can, I think, do very little; perhaps he is only fulfilling one of the laws of nature—the gradual weeding out of the unfit. Our powers of locking him up are limited and difficult of application; you cannot reform, and you mustn't pole-axe him.

You remember Eccles in "Caste," the reprobate old drunkard whose daughter was about to marry a young man of position.

It was suggested to Eccles that if he were sent to the Channel Islands, where brandy is cheap, perhaps he would drink himself to death in a few months: and his answer was "I'll try, Sir, I'll try."

There is a grim truth in this.

But the other man, the man who habitually drinks in excess of his income, is a person one meets with frequently.

It is no uncommon thing for a working man to drink one-fifth or one-sixth of his weekly income. He thinks nothing of this, and is hardly considered extravagant, though the consequence is very serious to his wife and family and to himself in his old age.

I wonder what would be said if one of us spent a fifth or a sixth of his income on champagne, which is about the same thing.

Much of this is due to thoughtlessness and to habit. I hope, and I think, that it is slowly disappearing. I was much pleased a few days ago to hear a master builder say that ten years ago all the workmen left work and went to the nearest "pub" for the rest of that day when they got the money to wet the flag on a new roof.

"But now," said he, "they will divide the money and not lose an hour."

I think one may take Dickens' picture of the medical student of his time as a fair one. The medical students of my time, though not up to that standard, were not models of youthful virtue.

They tell me that the student of to-day is a most respectable young person, and it would be calumny to compare him with Bob Sawyer or Ben Allen. It is true that the medical student of to-day is "mothered" in a way that was unknown in my time: his attendance at lectures is checked, he is constantly being coached and examined by his own teachers, and he is requested to move on if he is not a good boy; whereas, in my time, one could attend lectures or not, just as one pleased, and there were comparatively no test examinations. Nevertheless, a change is coming over him which is not altogether due to treatment.

One of the features of the past thirty years which always strikes me as remarkable, is the increase in size and ornamentation of our houses, hotels, and particularly of our public houses.

I recollect when the Langham was built it was considered enormous, and people said it would never fill. What is it now compared to the many which have succeeded it? But the improvement in the working man's house, especially in the country, has not kept pace with this, and where they have larger rooms and better accommodation, they too frequently fill up with lodgers, and so far as my experience goes, the section of the P.H. Act, which refers to overcrowding, is not enforced as it should be. The overcrowding in farmhouses and seaside lodgings during the season is simply appalling.

No wonder when a working man comes home after a day's work and finds a squalling baby, the week's wash lying about, and a badly cooked meal, he goes off to the public house (the working-man's club) with its constant change, its brilliant light, and its least unpleasant of noises, in the form of the ubiquitous polyphone, or the itinerant harpist.

Then the wife, having no encouragement from the man, gets more and more slatternly, and so the vicious cycle continues. I will say nothing when it is the wife who drinks.

Now you will ask me what remedy I am going to suggest for this condition of things, and I have to confess that I am fairly nonplussed. But we must remember that it is the growth of centuries, and is founded on callousness and indifference. Hence we cannot expect to remove it in a day or even in a generation.

For that part of it which is consequent on the death or ill-health of the bread-winner, we can do nothing; but we may in the future diminish much of the ill-health now existing, and perhaps some of the laziness. Something we can do to prevent unnecessary drinking by pointing out the extravagance of it, and the advantages to be gained by thrift.

I take it that education is the one thing on which we have eventually to depend, and by education I do not mean higher mathematics and the violin, but an education which shall enable the people to understand and appreciate the laws of health. But education is not a thing of a day or a year, and the good effects of it may not appear for another generation.

Many cynical persons suggest that education as it is at present only makes the working classes more selfish and lazy, that it makes it more and more difficult to get good servants, and that the class of literature affected by the working classes is of the lowest order: all of which is true. But is it fair to blame education for this ? Universal education is in its infancy—do not all infants need much looking after ? And is not every good thing capable of being put to a wrong use ?

If much of the ephemeral and highly spiced literature of the day is bad—and some of it could not well be worse—one cannot but notice that much of the best literature is obtainable at a small cost. If servants are not so good as they are said to have been, is it not possible that mistresses and masters are not what they were ? In these days of universal travel, in these days of wealth and pleasure, servants have ceased to form a part of the family. And is not proper selfishness (the preservation of self), one of the first laws of nature. Mistresses complain that their maids do not save money as they used to, but the Prudential Insurance Company, with a capital of upwards of £50,000,000, and many others like it, shows that somebody saves.

Look how the working classes, and not only the working classes, are benefiting themselves at the expense of our profession by belonging to clubs. It may be rough on us, but it is not a bad sign of the times.

The mistake appears to be that education ceases at too early an age, before the children have learned to apply their knowledge, and it is not specialized enough.

The parents not having themselves had the advantage of education look too often upon school time as time wasted, time which might be better spent in earning something towards the family purse, or in assisting the mother.

But few children care for education for its own sake, and fewer still see the advantage of it. Can any of us deny this ?

Then the education of children is in one respect like that we received at hospital. We learned a heap of surgery which is of no practical use to the general practitioner, we saw a number of interesting medical cases seldom seen afterwards, we could have done an amputation at the hip, or written a learned thesis on the microscopical appearances of the spinal chord in polio-myelitis; and we didn't know what to do for a headache, or how to lance a baby's gum. Later on in life, and at our own expense, we learnt these things. But the child who goes to labour as soon as he leaves school has no occasion to continue to learn.

Children require to be taught that school is not a horrid necessity to be got rid of as soon as possible, but that it is a training for the whole of their future lives. That knowledge will bring to them permanent amusement far exceeding the pleasures of the hour, amusement which can be enjoyed years after other things have ceased to please, and can be made to give pleasure to others, to brighten the home, make toil sweeter, and trouble less hard to bear.

We want our young married women to know how to take care of themselves during the pregnant state. We want them taught how to feed and dress their children. How few women enter the marriage state with any idea of its duties and obligations. To most young women in every walk of life, marriage presents itself as the *summum bonum*; to almost every other position in life one has to be trained and educated, but "as ignorant as a young mother" is almost an aphorism.

Cannot we induce the rich young married woman to give up some of her life of pleasure to her duty to the future generation? Cannot we do something to prevent the production of abortion, and its wholesale frequent attempt, in the present day?

Our daughters go to Switzerland, Germany and Paris to finish their education, cannot we also give them lessons in cooking and housekeeping, cannot we teach them something about the rearing of children as well as of chickens? The late queen set the nation a grand example in this matter.

We all bewail the great waste of infant life which is so largely due to ignorance, not to mention the sorrow and suffering it entails, and yet as Medical Officers of Health we are in a position to do little more than note the fact. We want all children to be brought up as strict abstainers from their birth; we want them taught the harm of cigarette smoking, and particularly of masturbation. Much of this might with advantage be added to the curriculum of the Mothers' Union, and perhaps district visitors might be brought to assist. We hear more and more each year of missionaries for other peoples, and medical missionaries whose work is quite as much to teach the elementary truths of health as religion. I should like to see more missionaries in our country districts who would teach the poor *in their own homes* how to cook, and how to feed and dress their children. We of course are all missionaries. Ours is called a noble profession, and noble it is in its unselfish desire to do good to others. To us is given enormous power for good and evil: a power far surpassing that held by ministers of religion, a power, which, when you come to seriously think of it, makes one almost frightened to possess it. Hitherto it has been used for the good of others. Let us continue so to use it, and I have no fear that we shall satisfactorily solve this difficult problem, which, when all is said, largely depends on us as individuals.

PUBLIC HEALTH BILL.

QUALIFICATION AND TENURE OF OFFICE OF MEDICAL OFFICERS OF HEALTH AND SANITARY INSPECTORS.

The Annual Representative Meeting of the British Medical Association at Oxford approved the principle of seeking legislation to give security of tenure to Medical Officers of Health and Sanitary Inspectors. The matter has since been under the consideration of the Public Health and Medico-Political Committees, and the following Bill prepared by these Committees has been approved by the Council of the Association. The Bill is now brought under the notice of the Divisions of the Association in order that they may seek for it the support of the Members of Parliament and candidates for Parliamentary representation in their respective districts. The Council of this Society expects that each Medical Officer will do his best to promote the Bill.

MEMORANDUM.

The main objects of this Bill are to ensure that none but those properly qualified shall be appointed as Medical Officers of Health or Sanitary Inspectors, and to give all such officers and inspectors similar security in their tenure of office to that enjoyed by Poor Law Medical Officers and Metropolitan Medical Officers of Health. As the law stands no qualification is required for a Sanitary Inspector except in London, and as a general rule a Medical Officer of Health or Sanitary Inspector is appointed from year to year only, and thus has no true security of tenure. Poor Law Medical Officers and Metropolitan Officers of Health are not appointed for limited periods only, and are removable only by or with the consent of the Local Government Board.

The duties of Medical Officers of Health and Inspectors are so important and responsible that they ought to be entrusted only to fully qualified persons whose position is satisfactorily secured.

Except in London Urban Sanitary Authorities have no legal power to appoint more than one Sanitary Inspector. It is desired to extend the metropolitan powers to all urban sanitary districts.

In London the Sanitary Inspector is so called by law, but outside London the law names him "Inspector of Nuisances." It is proposed that the London name shall be universally used.

ARRANGEMENT OF CLAUSES.

CLAUSE
Qualification of Medical Officers of Health and Sanitary Inspectors 1
Tenure of office 2
Urban authority may appoint several Sanitary Inspectors .. 3
Administrative provisions 4
Definition of "Sanitary Inspector" 5
Saving for officers of Local Government Board and County Councils 6
Repeal of enactments 7
Extent of Act 8
Construction of Act 9
Short title and commencement of Act 10

A BILL

To amend the law relating to the qualification and tenure of office of Medical Officers of Health and Inspectors and for other purposes.

BE IT ENACTED by the King's Most Excellent Majesty by and with the advice and consent of the Lords Spiritual and Temporal and Commons in this present Parliament assembled and by the authority of the same as follows :—

1. *Qualification of Medical Officers of Health and Sanitary Inspectors.*—(1) A person shall not after the twenty-ninth day of September One thousand nine hundred and eight be appointed a Medical Officer of Health unless he is a duly qualified practitioner and unless either—

(*a*) He is registered on the medical register as the holder of a diploma in sanitary science public health or state medicine under section 21 of the Medical Act 1886 or

(*b*) He has for three successive years before the commencement of this Act served as a Medical Officer of Health of a district or combination of districts with a population according to the last published census of not less than fifty thousand or

(*c*) The Local Government Board consents to his appointment.

(2) A person shall not after the twenty-ninth day of September One thousand nine hundred and eight be appointed a Sanitary Inspector unless either

(*a*) He is the holder of a certificate of such body as the Local Government Board may from time to time approve that he has by examination shown himself competent for the office or

(*b*) He has for three consecutive years before the commencement of this Act served as a Sanitary Inspector of a district or combination of districts with a population according to the last published census of not less than twenty thousand or

(*c*) The Local Government Board consents to his appointment.

2. *Tenure of office.*—(1) A Medical Officer of Health or Sanitary Inspector shall not hold office nor be appointed for a limited period only and shall be removable only subject to an appeal to the Local Government Board.

(2) This section shall apply to every Medical Officer of Health or Sanitary Inspector whether appointed before or after the commencement of this Act and notwithstanding any contract to the contrary.

3. *Urban Authority may appoint several inspectors.*—An Urban Authority shall have power to appoint two or more Sanitary Inspectors.

4. *Administrative provisions.*—(1) Section 24 of the Local Government Act 1888 shall be construed as if in subsection 2 thereof the reference to regulations made by order under the Public Health Act 1875 included a reference to this Act or regulations made by order hereunder.

(2) Save as in this Act expressly provided nothing herein contained shall abridge or diminish the powers conferred upon the Local Government Board by the Public Health Acts or the Public Health (London) Act 1891.

5. *Definition of "Sanitary Inspector,"* 38 *and* 39 *Vict. c.* 55, 54 *and* 55 *Vict. c.* 76.—In this Act the expression "Sanitary Inspector" includes an Inspector of Nuisances and a Sanitary Inspector appointed under the Public Health Act 1875 or the Public Health (London) Act 1891 and an Inspector of Nuisances shall henceforth be designated a Sanitary Inspector.

6. *Saving for officers of Local Government Board and County Councils* 51 *and* 52 *Vict. c.* 41.—Nothing in this Act shall apply to a Medical Officer of Health or Sanitary Inspector appointed by the Local Government Board or by the council of any county under the Local Government Act 1888.

7. *Repeal of Enactments.*—The enactments specified in the schedule to this Act are hereby repealed as from the twenty-ninth day of September One thousand nine hundred and eight to the extent mentioned in the third column of that schedule.

8. *Extent of Act.*—This Act shall not extend to Scotland or Ireland.

9. *Construction of Act,* 54 *and* 55 *Vict. c.* 76.—This Act shall be read as one with the Public Health Acts and so far as this Act applies to London with the Public Health (London) Act 1891.

10. *Short Title and Commencement of Act.*—This Act may be cited as the Public Health (Officers) Act 1905 and shall come into operation on the twenty-ninth day of September One thousand nine hundred and five.

SCHEDULE.

ENACTMENTS REPEALED.

Section and Chapter.	Title or Short Title.	Extent of Repeal.
54 and 55 Vict. c. 76, (1891).	The Public Health (London) Act, 1891.	Section 108, subsection (2).

BIRMINGHAM AND CONSUMPTION.—The Health Department of the Birmingham Corporation has decided to appoint a special inspector with the object of giving full effect to a system of voluntary notification of phthisis, which was instituted some time ago. An estimate places the number of consumptives in Birmingham at 4,000, and the authorities are impressed with the importance of placing restrictive and preventive measures on a properly-organized basis. The officer about to be appointed will be required to keep records of all cases notified, to report upon the environment of the persons affected, and to exercise precautions against the spread of the disease and in the direction of mitigating its ravages where it already exists.

SMALL-POX AND VACCINATION.—Nearly twenty years ago, in the summer of 1885, small-pox broke out in Montreal, the infection having been brought by a Pullman car conductor from Chicago. The French-Canadians were, as a rule, unvaccinated, and under the influence of a popular doctor, who declaimed against vaccination, they persisted in refusing the protection offered them. The result was that 3,164 Montrealers, of whom but very few were English or Scottish, died of small-pox before winter set in, and the loss of trade due to the boycotting of the infected city by other places was enormous. The lesson, however, had been learnt; the French-Canadians have largely accepted vaccination; and, though the disease has been brought to Montreal again and again, it has never been able to make headway among the protected population. Dr. Laberge, the Medical Health Officer of Montreal, in a report just published, states that only 38 deaths from small-pox have occurred in the city—which has a population of about 300,000—in the last seventeen years.

LAW REPORTS.

HIGH COURT OF JUSTICE.

CHANCERY DIVISION.

November and December 3rd, 1904.

BEFORE BUCKLEY, J.

THE EARL OF HARRINGTON AND OTHERS *v.* THE CORPORATION OF DERBY.

A Municipal Corporation will not be restrained by injunction from allowing sewage to pollute a river so as to injure a private individual, in a case where some of the sewage is sent in under a prescriptive right and also when steps have been taken to prevent the continuance of the nuisance under the River Pollution Acts. The proper remedy is an action for damages, but the local authority will only be liable for such damage as is caused by their own acts and not for that caused by failure to do what they ought to have done to remedy the nuisance. The injury is a continuing one, and damages are not limited to six months by the Public Authorities Protection Act, 1893.

This was an action brought by the owners of Elvaston Castle and estate, which lies on the river Derwent about 5½ miles below Derby, against the Derby Corporation to obtain an injunction to restrain the defendants from polluting the river by sewage so as to cause a nuisance to the castle and estate, and also to recover damages for the injuries done by the pollution. The evidence showed that the pollution existed in a very gross degree, and that the plaintiff had had to close the inlet to a private lake which was fed by the river, and also to put up pumping machinery, as by reason of this closing up, a water-wheel which pumped water for the supply of the house and gardens could no longer be used. The results of the pollution have been that in the latter half of the decennial period ending in 1890, the pollution in the river and in the lake became so great that the fish in the river below Derby and in the lake died, and were found floating in the water covered with slime, and in or about 1893 to 1897 Lord Harrington was removing cart-loads of fish killed by the pollution, that about 1895 the water weeds in Lord Harrington's intake from the river died, and the weeds in the lake died (for while water-weeds may flourish upon a small amount, they are killed by a large amount of sewage pollution) and that about the same time the water in the lake became so fetid that residence at the castle became not only unpleasant, but to a large extent dangerous. The state of pollution at present is that the water at the intake is seriously polluted with sewage with the result that the lake is in a filthy and almost dangerous state. In 1898 the County Council obtained from the County Court under the Rivers Pollution Prevention Acts of 1876 and 1893 an order on the Corporation to abstain from polluting the river. That order gave the Corporation until December 31, 1902, to do what was required. That time has since been twice extended, and the second extension will expire on January 1st, 1906. In 1872 the then Earl of Harrington, father of the present earl, commenced, and the present earl upon succeeding in 1881 continued, to make repeated complaints and protests to the defendants against the grievous state of things which existed in the river. The repeated complaints were met with repeated promises or assurances that something would be done, but nothing in fact was done by the defendants to remedy the state of things which existed. In 1898 the order of the County Court was obtained. In 1901 the corporation obtained an Act giving them certain powers to deal with the sewage. The intended works under the order of 1898 had not been, and probably could not be, constructed and finished by 1902, and in July of that year Lord Harrington found it necessary to close, and did close, the source by which the water of the river flowed into the intake.

Mr. Macmorran, K.C., and *Mr. R. Cunningham Glen* were for the plaintiffs; and *Mr. Danckwerts, K.C.*, and *Mr. R. J. Parker* for the Corporation.

Buckley, J., in the course of a long judgment, said for many years past, and for aught I know since sewers were first laid, the sewage of the borough of Derby, as that borough existed before 1877, and as extended in that year and as again extended in 1901, has been discharged in a crude state, without purification or treatment of any kind, into the river Derwent. The discharge is by outfalls. By the outfalls the whole sewage of the borough is discharged into the river. These outfalls were all made more than twenty years ago, and the sewage thus discharged has for many years polluted the river. The pollution has been continually increasing since at least 1872, as the population of Derby has increased, as new connections have been made to previously existing sewers, as new sewers have from time to time been laid, and as privies have from time to time been converted into water-closets. I will first deal with the question whether the plaintiffs can obtain the injunction which they ask, to restrain the defendants from polluting the river so as to cause it to be a nuisance to them. For this purpose it is necessary to bear in mind that the sewage which is now polluting the river may come from any one of four sources of origin, *viz.* (1) From sewers constructed many years ago, into which householders have for more than twenty years discharged their sewage; (2) From sewers not laid by the corporation, but which became vested in the corporation when they became the sanitary authority, into which householders have, by virtue of their sanitary rights, made connections; (3) from sewers laid by the corporation; and (4) From additional sewage arising from the conversion of privies into water-closets under directions given by the corporation for that purpose. As regards the first class, it is, I think, settled by authority that persons who have discharged their sewage for more than twenty years have obtained a prescriptive right. It is true that this prescriptive right is not that of the defendants; but of persons who use the sewers of the defendants, but it would be impossible, I think, to grant an injunction which would interfere with those prescriptive rights. The corporation have, in fact, as was decided in *Attorney-General* v. *Dorking*, 20 Ch. D., 595, only a limited ownership in the sewers, and are not in the same position as a private individual would be, because they have in many cases no power to prevent householders from using them and when they have no power a landowner cannot obtain an injunction against them by reason of the fact that they in turn could not obtain an injunction against the householder. It would, therefore, be impossible to grant an injunction which should extend to sewers of the first class, for the Court will never enjoin a defendant unless it is satisfied that the party enjoined can obey the order. Similar considerations apply to sewers of the second class. The sewers of the first and second classes are a constituent contributing to the total volume of sewage which is discharged through the outfalls, and if an injunction cannot be granted as regards the first and second classes it is, I think, physically impossible and practically impossible for the defendants to comply with an injunction if an injunction were granted as to the sewers of the other two classes. This seems to be a first ground why an injunction cannot be granted. Further, under the Rivers Pollution Acts, the plaintiff, Lord Harrington, as a person aggrieved, could obtain protection not only as regards sewage which the defendants cause to fall or flow or knowingly permit to fall or flow into the river, but also under the Act of 1893, as regards sewage which in fact falls or flows or is carried into the river after passing through the sewers of the corporation, so that a larger protection than otherwise might be possible is afforded under those Acts; and in point of fact, by the order of 1898, which was obtained with the knowledge and at the instigation of the plaintiff, he has obtained such protection, and that protection is on its way to be given by the construction of works as to whose efficiency I have not to enquire in this action. Under these circumstances I should be slow to grant an injunction which would or might give him protection a second time, but a protection less, it may be, than has already been obtained under the order of 1898. The proper remedy (if any) in respect of this matter is in damages. It remains then to consider whether the plaintiffs can obtain, and under which of the heads on which they rely, damages against these defendants. The defendants are liable, they say, generally for causing sewage to be discharged into the river, and for not keeping their sewers so as not to be a nuisance—liable not for misfeasance only, but for non-feasance also, and say that to throw sewage into the river so as to cause a nuisance is an illegal act and that the defendants are consequently liable in damages for all the pollution which is caused by the total volume of sewage that is discharged into the river. In my judgment, the defendants are liable in damages only for such acts as they have done, and which have occasioned the pollution by which the plaintiffs are injured. They are liable in damages for that which they have done, but not for that which they ought to have done, but have failed to do. This being so, I must confine my attention to cases in which either (1) The corporation has laid new sewers, or (2) Has invited or permitted householders to make new connections with the sewers of the corporation, or (3) Has permitted or required the conversion of privies into water-closets so as to increase the volume of sewage. No exact evidence has been adduced to show what proportion of the total discharge of sewage into the river is attributable to these causes, but both parties agree that they have put before the Court such evidence as there is, and that it would be practically impossible to ascertain what is the exact amount of new sewers, new connections, and so on, which would lead to the answer to the above question. Upon the materials in evidence both parties concur in asking me to act as being the best material for assessing the damages so far as this point is concerned. The defendants contend that, having regard to section 1 of the Public Authorities Protection Act, 1893, the plaintiffs can recover damages for no longer period than six months before the issue of the writ. To determine this point it is necessary to ascertain the meaning of the words in the section—" in case of a continuance of injury or damage." The words do not mean or refer to a damage inflicted once and for all which continues unrepaired, but a new damage recurring day by day in respect of an act done, it may be for once and for all at some prior time, or repeated, it may be, from day to day. In such cases there is what Mr. JUSTICE CHANNELL, in *Carey* v. *Mayor of Bermondsey*, 67 Justice of the Peace, 111, calls a continuing cause of action. Where this is the case I think that, within Section 1 of the Public Authorities Protection Act, an action will lie when instituted six months next after the ceasing of the continuing injury or damages.

That is, I think, the present case. These plaintiffs are therefore, I think, entitled to recover for a greater period than six months, and up to the period of six years limited by the Statute of Limitations. I give judgment against the defendants for £500 and the costs of the action.

Appeal to the London County Council [Public Health (London) Act, Section 41 (3)].*—The London County Council has made bye-laws with respect to the construction of water closets and other matters, which bye-laws it is the duty of each local sanitary authority to enforce [Public Health (London) Act, Section 39 (3)].

Should, however, any person feel himself aggrieved by any notice or act of a sanitary authority . . . in relation to any water closet . . . he may appeal to the County Council, whose decision shall be final.

The plans of important premises in Berners Street were disapproved by the Public Health Committee because in one of the back areas a water closet in the basement was shown approached from an open space less than 5 feet across.

The words of the bye-law are, that the water closet must be approached directly "from an area or other open space available for purposes of ventilation measuring at least 40 superficial feet in extent, and having a distance across of not less than 5 feet, and not covered in otherwise than by a grating or railing."

The area in question had more than the 40 superficial feet, but was only 4 feet across.

The architect appealed against the decision of the Public Health Committee, and the appeal was heard before the London County Council Appeal Committee on December 6th.

The appellant contended that since the closet faced the longest way of the area the words "a distance across of not less than 5 feet" were satisfied, because "across" in this instance meant the distance from the closet to the opposite wall.

On behalf of the Borough Council it was argued that such a reading was inadmissible, that the words meant the least width from wall to wall of any part of the area; that if the appellant was correct then a person looking up the street was looking across the street, and that if the appeal was allowed then if it were possible a person could fix a closet abutting on an area 2 feet wide and 20 feet long, for by these dimensions he would get 40 feet superficial, and if the door of the closet opened on to and faced the longest dimension then it would be, according to the ideas of the appellant, more than 5 feet across.

The Committee of the London County Council unanimously dismissed the appeal.

It is officially announced that the Emperor of Germany has acceded to the request of Professor Dr. Robert Koch to be relieved of his post of Director of the Institute for Infectious Diseases, with a retiring pension. Notwithstanding his resignation, it is understood that Dr. Koch will remain in the service of the State for purposes of research work, and in the course of the coming winter he will proceed to German East Africa to carry out certain bacteriological studies there.

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* From Report for November, 1904, Borough of Marylebone.—A. Wynter Blyth.

CORRESPONDENCE.

DRIED MILK.

To the Editor of "Public Health."

Sir,

In the article on dried milk in the January number of *Public Health* it is stated that milk can be reconstituted by the addition of water to the dried powdered milk. This is obviously incorrect, as the constitution of the proteids has been altered by the heat of the drying process. The fat globules, too, have undergone change possibly only of the nature of aggregation, but sufficient to cause a considerable departure from those in normal milk as regards their physical properties.

It is quite true that on chemical analysis these dried milks give results which do not differ from those of fresh milk. The same could be said if a similar type of relatively crude analysis were made of cooked beef as compared with raw beef. The substance is an excellent and practically sterile food, but it is not milk.

When it is compared with fresh milk, as far as I can make out, it is a good deal more expensive. The samples which I have had from time to time have not kept well in their packages. Like fresh butter the fat has a tendency to get slightly rancid. I do not see any particular advantage which this kind of milk possesses for ordinary domestic use over unsweetened condensed milk, unless its present price can be greatly reduced.

Birmingham, Yours faithfully,
Jan. 11*th*, 1905. John Robertson.

POISONING BY HYDROGEN COMPOUNDS IN WORKSHOPS.

To the Editor of "Public Health."

Dear Sir,

Some time since you published a note from me respecting a case of chronic poisoning occurring in a man who spent his time in charge of an electrical accumulator, and which I suggested must be due to the hydrogen generated by such apparatus. The case was, I think, almost unique in Britain, but I find that in a recent French case* the fatal effects are attributed to arseniuretted hydrogen. Whilst there were no distinctively characteristic marks of arsenical poisoning in my case (where the patient always got better when he came into the open air), it was difficult to exclude the possibility of arseniuretted hydrogen having been present also.

I notice that the French author speaks of antimoniuretted hydrogen as being but little poisonous. But little is known of the subject, yet I have recently seen several cases, apparently of chronic antimonial poisoning, occurring in persons engaged in printing offices, and they appear to me to have become more common since electrical appliances were introduced into these offices—a fact which I attributed to the formation of antimoniuretted hydrogen by the machines in the presence of the antimony dust from the type.

Yours truly,
J. C. McWalter, M.A., M.D., D.P.H.

19, North Earl Street, Dublin,
December 30, 1904.

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* *Soc. méd. des hopitaux de Paris*, 11 Nov. 1904. MM. Barry and Brissy communicated particulars of an aëronaut who inhaled a quantity of the impure gas used for filling balloons.

STATISTICS FOR 1904.

It has been suggested by several Medical Officers of Health that it would be useful if there were published in *Public Health*, in the January or February issue, a summary of the vital statistics for the 76 great towns. In order to carry out the suggestion a letter was addressed to the Medical Officers of these towns, and the figures supplied by them have been tabulated below. Unfortunately, the time was too short for all to comply with the request, and another year perhaps the details asked for might be modified.

It may be possible in the future for the Registrar-General to issue a summary at an earlier date than he has hitherto done; but if not then several suggestions given by Medical Officers will receive attention. It seems desirable to make it more clear that all diarrhœal deaths are wanted, diarrhœa and epidemic enteritis, and also but separately "enteritis"; so also in order to obtain a more exact death-rate from tubercle, all tuberculosis deaths should be asked for, as it is well known that it is often a matter of chance whether a death is returned as pulmonary or general tuberculosis.

The mode of calculating rates from diarrhœa deaths on the number of births may in a number of instances convey a wrong impression; thus in Sheffield about 20 per cent of the deaths from diarrhœa occur in the second year of life.

A difficulty appears to exist in some towns in adjusting the deaths of residents occurring away from home and in public institutions outside their own districts. If this adjustment is left to the end of the year the difficulty in making it is considerable, and it might be suggested that the information should be obtained at shorter intervals during the year.

Some medical officers write objecting to the use of the factor for correction, but the majority have made use of it and several have written expressing their satisfaction that the rate thus corrected was asked for, where the rate from inadvertence or otherwise has not been so corrected, this has been done by the tabulator.

The Registrar-General has supplied the following information:—

ENGLAND AND WALES. YEAR 1904.

	Annual rates per 1000 living.			Infant mortality:—Annual death-rate of infants under one year per 1000 births.
	Births.	Deaths from all causes.	Deaths from seven chief epidemic diseases.	
England and Wales ...	27·9	16·2	1·94	146
Rural England and Wales	26·8	15·8	1·28	125
76 great towns	29·1	17·2	2·49	160
142 smaller towns ...	27·5	15·6	2·02	154

These rates are subject to revision.

VITAL STATISTICS RELATING TO THE 76 GREAT TOWNS FOR 1904.

Towns.	Recorded Death Rate.	Corrected Death Rate.	Birth Rate.	Deaths under 1 year per 1000 births.	Diarrhœa Mortality per 1000 births.	Enteritis Mortality per 1000 births.	Death Rates per 1000 persons living from:—							
							Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping Cough.	Enteric Fever.	Phthisis.	
London	16·10	17·00	28·00	144·00	36·70	4·8*	0·01	0·49	0·08	0·16	0·32	0·06	1·63	*Non-epidemic
Croydon	13·80	14·20	26·10	129·00	25·21	9·29	0·00	0·43	0·06	0·17	0·10	0·03	0·98	
Willesden	12·22	13·10	32·86	115·00	†25·78	†4·75	0·00	0·327	0·014	0·141	0·074	0·05	1·04	†These figures relate to deaths under 1 year only
Hornsey	8·43	9·62	20·40	87·00	14·4 0·29	10·2	0·00	0·22	0·012	0·085	0·20	0·024	0·57	
Tottenham ...														
West Ham ...	16·76	17·91	32·16	165·00	*60·00 1·94	5·00	0·00	0·58	0·13	0·14	0·35	0·11	1·40	*Comprises "Diarrhœa" 24, "Epidemic Enteritis" 36
East Ham	13·50	14·40	31·7	140·00	50·80	11·30	0·00	0·46	0·08	0·38	0·19	0·12	1·18	
Leyton														
Walthamstow ...	11·951	12·787	32·79	135·92	50·10	1·37	0·008	0·48	0·120	0·24	0·28	0·08	0·85	
Hastings	13·14	12·65	17·59	107·00	16·20	7·70	0·00	0·15	0·00	0·03	0·08	0·015	1·428	Diarrhœa mortality under 1 year 13·7 per 1000 births, Do. Enteritis 6·8
Brighton														
Portsmouth ...														
Bournemouth ...														
Southampton ...	13·83	13·76	26·78	114·50	†17·97	†2·00	0·00	0·00	0·009	0·107	0·143	0·009	1·22	†These figures relate to deaths under 1 year only
Reading	13·89	14·39	25·87	133·00	†58·00 1·50	†0·50	0·00	0·01	0·08	0·19	0·05	0·04	0·90	†The rates for deaths under 1 year are 45· and 0·5 respectively

Northampton ...														
Ipswich														
Great Yarmouth ...	17·02	15·62	27·90	165·00	80·90	7·50	0·00	0·28	0·06	0·46	0·68	0·06	0·90	
Norwich														
Plymouth	18·74	18·21	25·88	178·18	80·82 0·98	8·81	0·00	0·70	0·81	0·11	0·24	*0·15		*"Fever"
Devonport														
Bristol	15·44	15·86	26·05	183·91	22·35	5·00	0·002	0·26	0·10	0·80	0·80	0·04	1·19	
Hanley	21·2	28·18	33·80	206·00	55·00	10·1	0·08	0·60	0·40	0·60	0·10	0·10	1·01	
Burton-on-Trent ...	15·05	16·54	26·07	118·00	15·00	8·00	0·00	0·09	0·11	0·11	0·79	0·00	1·46	Diarrhœa deaths under 1 year 8· per 1000 births Do. Enteritis 4·
Wolverhampton ...	14·61	15·29	29·80	152·00	*55·00	9·20	0·00	0·00	0·14	0·18	0·61	0·12	0·90	*"Diarrhœa" includes "Zymotic Diarrhœa" and "Zymotic Enteritis"
Walsall														
Handsworth ...														
West Bromwich ...	15·9	16·05	33·50	149·00	84·00	4·00	0·00	0·10	0·10	0·02	0·20	0·10	0·80	
Birmingham ...	19·30	20·80	31·50	195·00	56·50	9·17	0·00	0·39	0·12	0·21	0·87	0·07	1·50	
King's Norton ...	11·02	11·53	28·40	102·00	8·50	13·20	0·00	0·90	0·06	0·09	0·27	0·03	0·60	
Smethwick ...	12·4	13·54	32·00	143·00	20·40	9·20	0·00	0·01	0·082	0·082	0·18	0·11	0·93	
Aston Manor ...														
Coventry	15·52	15·54	31·40	137·00	17·20	8·00	0·01	0·00	0·13	0·14	0·65	0·01	1·05	
Leicester	14·56	15·55	26·67	163·00	48·00		0·02	0·14	0·02	0·03	0·40	0·06	1·57	
Grimsby														
Nottingham ...	17·50	18·40	27·80	175·00	†50·00 1·37		0·05	0·18	0·11	0·28	0·35	0·23	1·31	†These figures relate to deaths under 1 year only
Derby	15·15	16·33	27·25	143·00	18·60	2·50	0·08	0·18	0·04	0·25	0·24	0·05	1·01	
Stockport	19·98	21·56	26·63	201·20	63·80	9·67	0·15	0·68	0·23	0·16	0·06	0·12	1·15	
Birkenhead ...	19·87	21·20	33·14				0·008	0·85	0·17	0·17	0·72	0·11	1·51	
Wallasey	16·05	17·57	29·43	157·90	36·90	5·30	0·00	0·56	0·14	0·21	0·73	0·12	0·89	
Liverpool	21·90	23·40	33·50	196·00	†49·00	†9·00	0·0027	0·96	0·20	0·27	0·58	0·11	1·70	†These figures relate to deaths below 1 year only
Bootle	18·61	20·56	30·93	180·00	51·61	18·24	0·00	0·77	0·20	0·25	0·66	0·04	1·61	
St. Helens ...	20·39	22·10	37·33	174·00	†24·4 1·35	†9·10	0·03	1·47	0·17	0·24	0·55	0·12	1·58	†These figures relate to deaths under 1 year of age only Gastritis 8·4 (not included)

VITAL STATISTICS RELATING TO THE 76 GREAT TOWNS FOR 1904.

Towns.	Recorded Death Rate.	Corrected Death Rate.	Birth Rate.	Deaths under 1 year per 1000 births.	Diarrhœa Mortality per 1000 births.	Enteritis Mortality per 1000 births.	Death Rates per 1000 persons living from:—							
							Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping Cough.	Enteric Fever.	Phthisis.	
Wigan	19·46	21·49	34·59	188·00	48·00		0·015	0·35	0·17	0·04	0·52	0·24	1·08	
Warrington ...	19·47	21·00	32·7	171·00	15·00	44·00	0·058	0·534	0·759	0·058	1·255	0·043	1·168	
Bolton	16·90	19·12	26·90	167·00	32·90	12·80	0·005	0·09	0·12	0·16	0·76	0·21	1·25	
Bury	17·14	19·20	23·66	163·00	26·00	0·72	0·03	0·46	0·17	0·12	0·72	0·12	1·66	
Manchester ...														
Salford	21·00	23·22	31·70	193·00	51·23	11·84	0·01	1·10	0·24	0·50	0·60	0·20	1·97	
Oldham	18·30	20·60	24·90	155·00	19·90	6·00	0·10	0·50	0·16	0·24	0·26	0·16	1·88	
Rochdale														
Burnley														
Blackburn	17·20	19·40	23·50	191·90	40·30	0·90	0·00	0·45	0·09	0·08	0·72	0·15	0·94	
Preston	17·83	19·52	28·26	183·00	†33·49		0·05	0·74	0·06	0·18	0·25	0·25	1·06	†These figures relate to deaths under 1 year only.
Barrow-in-Furness	12·04		27·96	122·00	18·40	0·50		0·02	0·16	0·04	0·25	0·07	0·69	
Huddersfield ...	17·51	18·81	23·71	136·00	0·52	0·18	0·01	0·79	0·11	0·15	0·26	0·07	1·33	
Halifax	15·50	16·60	20·10	130·00	13·40	7·80	0·08	0·41	0·21	0·15	0·17	0·09	1·20	
Bradford	17·54	19·39	22·02	166·93	41·41	5·73	0·01	0·53	0·12	0·53	0·19	0·14	1·38	
Leeds	17·92	19·56	28·00	176·00	*35·90 1·01	7·24	0·00	0·77	0·18	0·11	0·46	0·10	1·40	*"Diarrhœa" includes "Diarrhœa" 26·59 and "Zymotic Enteritis" 9·31
Sheffield														
Rotherham ...														
York	16·18	16·66	28·15	170·00	†49·00	5·00	0·01	0·17	0·38	0·17	0·28	0·17	1·34	†These figures relate to deaths under 1 year of age only
Hull	18·00	18·20	30·80	181·00	66·70 2·00	4·30	0·00	0·70	0·00	0·20	0·20	0·10	1·20	
Middlesbrough ...	19·94	20·00	37·12	170·	33·7	15·8	0·00	0·40	0·10	0·11	0·25	0·18	1·28	
Stockton-on-Tees														
West Hartlepool ...	16·30	14·20	33·03	134·00	12·60	9·90	0·00	0·19	0·03	0·47	0·67	0·03	0·85	
Sunderland ...	19·40	20·00	34·40	165·	15·20	*18·20	0·01	0·88	0·02	0·17	0·42	0·22	1·87	*"Diarrhœa" includes "Epidemic Enteritis" 8·4 and

Gateshead													
Newcastle-on-Tyne													
Tynemouth ...	19·44	20·06	34·91	152·00	22·69 0·75	14·04 0·49	0·15	0·54	0·08	0·07	0·18	0·07	1·28	
Newport (Mon.) ...	15·70	17·00	32·7	149·60	81·40	7·20	0·00	0·027	0·18	0·11	0·36	0·07	0·96	Diarrhœa rate under 1 year per 1000 births 28·8 Enteritis rate under 1 year per 1000 births 5·9
Cardiff	15·20	16·50	29·50	144·00	24·70	6·70	0·005	0·36	0·14	0·17	0·34	0·05	1·36	
Rhondda	19·10	21·00	39·70	190·00	46·00 1·72		0·00	0·83	0·16	0·26	0·43	0·34	0·94	
Merthyr Tydfil ...	19·7	20·86	38·50	186·00	†26·70	†10·30		0·10	0·23	0·22	0·45	0·25	1·20	†These figures relate to deaths under 1 year only
Swansea	17·70	18·90	30·50	172·00	24·00 0·75	2·60	0·00	0·00	0·14	0·24	0·99	‡0·05	1·46	‡"Fever."
Edinburgh ...	15·04	15·66	23·42	125·00	*4·62	*6·55	0·04	0·19	0·09	0·18	0·55	0·06	1·22	*"Diarrhœa" includes "Zymotic Enteritis," "Enteritis" includes "Gastro-Enteritis"
Glasgow	18·16	20·11	30·99	145·00	*34·09		0·08	0·43	0·08	0·11	0·73	0·10	1·84	*Includes "Enteritis" ‡Corrected by Factor of Reg. Gen. for Scotland.
Dublin														
Belfast														
County of Durham		18·30	35·60	162·00	0·95	0·38	0·03	0·55	0·16	0·29	0·43	*0·15	1·07	*Includes "Continued Fever"

The figures placed in several instances below those indicating the Diarrhœa and Enteritis rates per 1000 births relate to the rates per 1000 persons living.

PROCEEDINGS OF THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTITUTED, 1881. INCORPORATED, 1891.

GENERAL MEETING.

A GENERAL MEETING of the Incorporated Society of Medical Officers of Health was held at the Offices of the Society, 9, Adelphi Terrace, Strand, London, W.C., on Friday, January 6th, 1905, the President, Dr. J. F. J. Sykes, being in the Chair. The following members of the Society were present: Drs. W. J. Simpson, F. E. Crookshank, J. Mitchell Wilson, J. W. Hembrough, W. H. Symons, R. A. Dunn, J. Groves, C. Sanders, George Newman, Frank Robinson, F. Turner, J. Howard Jones, E. Carnall, R. K. Brown, P. Caldwell Smith, J. C. McVail, G. B. Millson, H. Franklin Parsons, J. T. C. Nash, Reginald Dudfield, F. H. Alderson, H. W. Roberts, W. A. Bond, Hugh Woods, J. Wilkinson, A. K. Chalmers, A. Newsholme, F. J. Allan, A. D. Cowburn, Edward Willoughby, Herbert Jones, T. H. C. Stevenson, J. Kerr, H. Meredith Richards, Sidney Davies, E. F. McCleary, Prof. Kenwood, H. Beale Collins, and Mr. Wolf Defries. Among the visitors were Sir John Gorst, Sir Lauder Brunton, Miss A. M. Anderson (Home Office), etc.

The President, Dr. J. F. J. Sykes, having taken the Chair, the Hon. Sec. reported that the minutes of the previous meeting had been printed and published in *Public Health*, it was resolved unanimously that the minutes be taken as read and that they be duly confirmed.

CORRESPONDENCE.—The Hon. Sec. read letters from Dr. Arnold Evans, Prof. Sims Woodhead, and Dr. Ebenezer Davies regretting their inability to be present.

REPORT OF COUNCIL.—The Hon. Sec. read the following Report of the Council.

REPORT OF COUNCIL.

Your Council report:—

1. That Dr. Anningson has been appointed President of the Eastern Counties' Branch for the year 1904–5.

2. That they have received and adopted the following report from the Finance and Journal Committee:—

(*a*) That they have elected as Chairman Dr. J. R. Kaye.

(*b*) That the balance at the bank up to date is £345 2s. 1d.

(*c*) That since the last meeting of the Committee, accounts amounting to £259 1s. 8d. have been paid.

(*d*) That out-standing accounts amounting to £217 19s. 6d. have been ordered to be paid.

(*e*) That they have voted a sum of ten guineas to Mr. Kent for services rendered whilst clerk to the Society.

(*f*) That, after lengthy negotiations between the Hon. Solicitors of the Society and the Solicitors of the Lessor, the lease of 1, Upper Montague Street, Russell Square, is now ready for signature, and that the new premises will be ready for the uses of the Society at the next Council meeting, to be held in April, 1905, and that they, therefore, recommend that power be given for the lease to be signed and sealed on behalf of the Society, the rent to commence as and from December quarter, 1904.

(*g*) That they have carefully considered the question of the Jubilee of the Society in 1906, and recommend the appointment of an acting Committee for the purpose, consisting of the President, Treasurer, Editor, and two Hon. Secs. as *ex-officio* members, the Secretaries of all the Branches, and Dr. Reginald Dudfield, with power to add to their number.

(*h*) That they have accepted an offer from the Metropolitan Branch to rent rooms in the Society's new premises, No. 1, Upper Montague Street, Russell Square.

3. That they have received and adopted the following Report from the Parliamentary Committee :—

(*a*) That they have elected as Chairman, Dr. J. Groves.

(*b*) That they are considering the advisability of altering any, or all, of the Articles of Association, and are waiting for the replies from all the Branches, when they will report further.

(*c*) That they are considering the resolution of the North-Western Branch with respect to the Medical Officer to the Education Committee being the Medical Officer of Health of the District in those Districts where the Sanitary Authority is also the Education Authority, and are considering what action (if any) to take with reference to the exclusion from school of children under the ages of 4 or 5 years.

4. That they have received a letter from the Metropolitan Branch asking for an expression of opinion on the subject as to what officers of a Sanitary Authority should carry out the duties laid down in the Shop Hours Act, 1904, but have to report that, in connection therewith, no action was taken.

5. That they have re-appointed Dr. T. O. Dudfield to again represent the Society on the Sanitary Inspectors' Examination Board, as and from December 31st, 1904, in accordance with Article VI of the Memorandum and Articles of Association.

6. That they have given an instruction to the Parliamentary Committee that, in dealing with suggested alterations to any, or all, of the Articles of Association, provision shall be made for all Medical Inspectors of the Local Government Boards of England and Wales, Scotland and Ireland, together with all Medical Inspectors of the Home Office, to be, in future, entitled to become Fellows of the Society.

Resolved on the motion of Dr. Millson, seconded by Dr. C. Sanders, that the Report be received.

Resolved on the motion of Dr. Reginald Dudfield, seconded by Dr. Millson, that the Report be adopted.

ELECTIONS.

The following candidates having been duly nominated, were balloted for, and the President declared them to be unanimously elected :—

AS FELLOWS.

Bell, William, M.B., Ch.B., Cliffe House, Skelmanthorpe, Huddersfield, M.O.H. Embly U.D.

Butterworth, John James, M.D., B.Ch., D.P.H., Town Hall, Salford, Assistant M.O.H. Salford C.B.

Chapin, Charles V., City Hall, Providence, U.S.A., M.O.H. Providence.

Millard, R. J., M.B., Ch. M., D.P.H., Board of Health Office, Sydney, N.S.W., Assistant M.O.H. Department of Public Health, Sydney, N.S.W.

Robinson, C. A., B.A., M.B., The Grange, Bletchingley, Redhill, Surrey, M.O.H. Godstone, R.D.

Smith, Andrew, M.D., Wickham, Swalwell, R.S.O., M.O.H. for Wickham U.D.

Tobin, John Joseph, M.D., Galtee House, Ilkeston, Derbyshire, M.O.H. Borough of Ilkeston.

AS MEMBERS.

Colyer, Stanley William Randolph, L.R.C.P., M.R.C.S., D.P.H., 84, Palace Road, Tulse Hill., S.W.

Gordon, Alec. K., B.A., M.B., B.C. Monsall Hospital, Manchester, Medical Superintendent Manchester City Fever Hospital.

Roberts, Edward Hugh, M.R.C.S., L.R.C.P., D.P.H., Borough Fever Hospital, Croydon.

Robinson, Frank, M.D., D.P.H., 14, St. Mary's Square, Paddington, W.

AS ASSOCIATES.

Harper, Cecil Randle, 289, Peckham Rye, London, S.E.

Rideal, Samuel, D.Sc., F.I.C., 28, Victoria Street, Westminster, S.W.

Sir Lauder Brunton then read a paper on the "Report of the Inter-Departmental Committee on Physical Degeneration," which was followed by an interesting discussion.*

Midland Branch.—A Meeting of this Branch was held at the Council House, Birmingham, on January 5th, 1905, at 3.30 p.m. Present: Drs. Howard Wilkinson (President, in the chair), Beatty, Boobbyer, Chatelier, J. Clark, Codd, R. Green, Bostock Hill, Malet, H. May, McCrindle, Richmond, J. Robertson, Snell, and Whitaker.

The Branch proceeded to consider what alterations, if any, were desirable in the Articles of Association. It was resolved unanimously:—

"That Article 40 be repealed, and in its stead the following words be inserted: 'That each Branch be allowed a small fixed sum per member for Branch expenses, and that the travelling expenses of Branch representatives on the Council of the Society, when attending Council Meetings be paid by the Society, instead of being paid by the Branches, as at present.'

"That Article 41 (d) read as follows: 'Two Honorary Secretaries, of whom one shall be a member of the Metropolitan Branch and one a Member of a Provincial Branch!'

"That in view of the altered conditions as regards the distribution of members, the time has arrived for the reconstitution of the Council of the Society on the basis of the representation of all Branches of the Society on the Council of the Society in proportion to the numbers of their members.

"That a copy of the last resolution be forwarded to all the Provincial Branches of the Society and that they be invited to express an opinion on the matter, and, if necessary, that a meeting be convened at a central place for considering the subject."

Drains and Sewers.—Dr. Robertson made a short communication on the difficulties in determining what is a drain and what is a sewer; he complained of the perplexities of the question, and concluded by moving the following resolution, which was seconded by Dr. Snell, and carried unanimously:—

"That the Midland Branch is of opinion that the Council of the Incorporated Society of Medical Officers of Health should be requested to have a statement prepared showing the effects of the various decisions on the question of the definition of drains and sewers which have been given since the passing of the 1890 Act, and having obtained such a statement, that representations should be made to the Local Government Board pointing out the anomalies existing and asking them to take steps to provide a remedy."

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*See pp. 274–292.

Unofficial Agents.—Dr. Boobbyer made a short communication on the question of employing unofficial agents, including children, in taking samples under the Foods and Drugs Acts, pointing out that one gentleman had pronounced the practice as " immoral."

Dr. Robertson said he had always employed adults as unofficial agents, and that there were many reasons against employing children in that capacity.

Dr. Bostock Hill said he had to employ unofficial agents in about 60 per cent of his samples, mostly adults. The " immorality " in his opinion rested rather with the fraudulent tradesman, who knowing the Food and Drug Inspectors gave them pure goods, but palmed off adulterated articles on ordinary purchasers.

Northern Branch.—The Annual Meeting of the Branch was held in Newcastle-on-Tyne on the 28th Oct., 1904, under the presidency of Dr. T. Eustace Hill.

The Hon. Secretary's report showed that the finances of the Branch were in a satisfactory condition, and that the membership of the Branch was now about 55.

The Quarterly Meetings for 1905 will be held at the following places, *viz.*, Newcastle-on-Tyne on the 4th Friday of February and October; at Darlington on the 4th Friday of April; and at Hexham on the 4th Friday of June.

Officers elected were: Vice-President, Dr. Hembrough; Hon. Sec. and Treasurer, Dr. Taylor; Auditors, Dr. Jackson and Dr. Hembrough; Council, Drs. Armstrong, Arthur, Dingle, Gofton, Jackson, Horne, Morison, and Stainthorpe.

Dr. Jackson read a paper on " Do Infant Schools improve the Mental and Physical condition of the Children? "

After a very short discussion further consideration of the paper was adjourned to the next ordinary meeting.

Southern Branch.—A Meeting of the Branch was held at Portsmouth on January 13th, 1905. Present: Dr. Groves (in the Chair), Drs. Fraser, Lauder, Stephens, Willoughby, and Griffith.

The advisability of altering the Articles of Association of the Society was discussed, and postponed until the next meeting for fuller consideration. Dr. Willoughby read a paper on " The Value of Hospitals for Scarlet Fever." This was discussed by the other members present; and a hearty vote of thanks given to Dr. Willoughby.

The members afterwards lunched together at the Central Hotel.

Next meeting of Southern Branch, April 7th, at Southampton.

ANNUAL DINNER OF THE METROPOLITAN BRANCH.

Sir Shirley and Lady Murphy as the Guests of the Evening.

A most successful and enjoyable evening was spent at the Holborn Restaurant on Friday, Jan. 27th, 1905, when the Metropolitan Branch entertained, as the guests of the evening, Sir Shirley and Lady Murphy, on the occasion of the Annual Dinner. There was a large attendance of members and others, and many ladies were present.

The guests were received by the President of the Metropolitan Branch and Mrs. H. W. Roberts in the Gordon Rooms, a Band playing during the reception. Amongst those present were: Sir Shirley and Lady Murphy, Dr. Whitelegge, President of the Epidemiological Society, and Mrs. Whitelegge, Dr. Sykes, President of the Incorporated Society of Medical Officers of Health, and Mrs. Sykes, Prof. and Miss W. R. Smith, Dr. and Mrs. Chisholm Williams, Dr. Tatham, Dr. Seaton, Dr. Collingridge, Dr. Armstrong, Dr. Newsholme, Prof. Wynter Blyth, Dr. Groves, J.P., Dr. Parsons, Dr. P. C. Smith, Mr. Wynter Blyth, F.I.C., Dr. Goodall, Dr. Wanklyn, Dr. Young, Dr. Seward, Dr. Dixon, Dr. and Mrs. R. K. Brown, Dr. and Mrs. Allan, Dr. and Mrs. Millson, Dr. and Mrs. Jackson, Mr. and Mrs. Keith Young, Dr. Caiger, Dr. and Mrs. Annis, Dr. Frank Robinson, Dr. Renner, Dr. Scott Tew, Dr. Butler Hogan, Dr. and Mrs. McLeod, Dr. and Mrs. E. Clarke, Dr. and Mrs. Priestley, Dr. Newman, Prof. and Misses Kenwood, Miss Roberts, Dr. and Mrs. Bond, Dr. and Mrs. Louis Parkes, Dr. Reece, Dr. and Mrs. Deane Sweeting, Dr. Copeman, Dr. Bulstrode, Dr. Hamer, Dr. and Mrs. M. Richards, Dr. S. Davies, Dr. Paget, Dr. and Miss Woodforde, Dr. Mansel Howe, Mr. W. Defries, Mr. W. R. E. Coles, Clerk of the Worshipful Company of Plumbers, Dr. G. S. Buchanan, and others.

The Vice-chairs were occupied by Dr. Priestley, Dr. Millson, Dr. Parkes, and Dr. Allan.

After the usual loyal toasts given by the chairman (Dr. H. W. Roberts), Dr. Whitelegge, C.B., rose to propose the toast of Sir Shirley and Lady Murphy, the guests of the evening.

Dr. WHITELEGGE, C.B.: On behalf of the Branch I am pleased to be chosen to convey to Sir Shirley and Lady Murphy the high regard in which they are held by us all. As an old friend I am particularly pleased to undertake this duty. His Majesty the King, who does all things well, and bestows honour where honour is due, last November conferred an honour on one who represents the health service in its best aspects. Sir Shirley Murphy will probably tell us something in his reply of the advances which has been made in public health matters, and the increase in the appreciation by the public of the services which the Health Officers of this country perform. I must, however, add that we owe much of this to men like him. I need scarcely remind you of his work in connection with the London Fever Hospital, as Medical Officer of the Borough of St. Pancras, as Assistant Director of the Animal Vaccine Establishment, and lastly as Medical Officer of the London County Council. Whatever criticism has been directed against that body, no adverse criticism has ever been made on Sir Shirley's work. We know his writings in those large orange-coloured volumes which come to us annually, besides the important volume on Hygiene to which we are constantly making reference. He has served this Society in several capacities and, including that of President, helped to bring it to its present condition of prosperity and influence. I can only allude to the Royal Commission and Departmental Committees on which he has served for the benefit of the nation at large. How he keeps abreast of all the latest work at home and abroad I fail to know, but suspect Lady Murphy acts as a worthy help meet to him in this as in all other respects. Sir Shirley's name is well known over the civilized world, and whenever foreign visitors come to this country it is to Sir Shirley Murphy they go for information. Lastly, I must speak of Sir Shirley and Lady Murphy in another capacity, one which I can testify from my own personal experience; it is that of staunch and tried friends. No time or trouble is ever spared by them to do a kind action. I could say much more, but I feel Sir Shirley and Lady Murphy are so well

Supplement to "Public Health."

SIR SHIRLEY F. MURPHY.

kn[illegible] all that more from me is [illegible] as[illegible] congratulate them once more H[illegible] and to rise and drink their [illegible]

[illegible] was received with much enth[illegible] honours.

SIR SHIRLEY F. MURPHY, who on ris[illegible] and prolonged applause, said: I should [illegible] or those of my wife if I did not express [illegible] you have given us to-night and for the [illegible] has said of me. The honour which I [illegible] it was, I believe, intended to be a re[illegible] Officers of Health, and in that sense [illegible] with better administration the work [illegible] recognized. My work has been es[illegible] us all, and although I hold a [illegible] that only which perhaps has led [illegible] the esteem in which the public ho[illegible] every year extending. It is to [illegible] Buchanan, Ballard, and o[illegible] this Society has also played an [illegible] of Medical Officers of Health. [illegible] to be grateful for the [illegible] received from the Medical Depar[illegible] from Dr. Whitelegge himself, wh[illegible] has let a flood of light into the [illegible] and from Dr. Tatham for the re[illegible] offer. I wish also to express th[illegible] Medical Officers. My association [illegible] received their assistance [illegible] goodwill. Their friendly [illegible] Coming a little closer [illegible] received from my own [illegible] Young. You have been good [illegible] the honour of being your [illegible] in medicine, my wife has [illegible] of the Medical Officer of He[illegible] emphasized the honour [illegible] member, and I can only thank [illegible] us to-night.

[illegible] **SYKES**, President of the So[illegible] the toast of "The Metro[illegible] that Dr. Roberts, the President [illegible] year of office. As Presid[illegible] [illegible] and of other Societies [illegible]

[illegible]

The **PRESIDENT** (Dr. H. W. Ro[illegible]

The toast of "The Ladies" was g[illegible]

M[illegible] **CHURCH** replied on behalf of the [illegible]

[illegible] dinner a band played, and [illegible] was given, including some inte[illegible] [illegible]-transmission by Miss Inglefield [illegible] [illegible] of regret for non-attendance w[illegible] Principal Medical Officer of the Lo[illegible] [illegible] Stevenson, Dr. J. S. Cameron, Mr. Gomm[illegible] Pro[illegible] Thresh, Dr. Reginald Dudfield, Dr. Bat[illegible]

SHIRLEY

known to you all that more from me is not necessary. I will therefore ask you to congratulate them once more on the honour bestowed by His Majesty, and to rise and drink their healths in a bumper.

The toast was received with much enthusiasm and drunk with musical honours.

Sir Shirley F. Murphy, who on rising was received with renewed and prolonged applause, said: I should not do justice to my own feelings or those of my wife if I did not express our thanks for the hearty welcome you have given us to-night and for the too kind things Dr. Whitelegge has said of me. The honour which I have received was not for myself, but was, I believe, intended to be a recognition of the work of the Medical Officers of Health, and in that sense I gladly welcomed it. Every year with better administration the work of the Medical Officer is being better recognized. My work has been essentially the routine work which falls to us all, and although I hold a somewhat more central position, it is that only which perhaps has led to this honour being conferred on me. The esteem in which the public hold us and the recognition of our work is every year extending. It is to the Medical Officers of the early days—Simon, Buchanan, Ballard, and others—to whom I think we owe much. This Society has also played an important part in increasing the influence of Medical Officers of Health. I feel very deeply that I have many reasons to be grateful for the cordial sympathy and support I have received from the Medical Department of the Local Government Board, from Dr. Whitelegge himself, whose conception of the duties of his office has let a flood of light into the work necessary under the Factory Acts, and from Dr. Tatham for the ready assistance he is at all times ready to offer. I wish also to express the sense of my gratitude to the London Medical Officers. My association with them has always been a pleasure; I have received their assistance, their kindly criticisms, and at all times their goodwill. Their friendly co-operation is something I value very highly. Coming a little closer home, I must refer to the great assistance I have received from my own more immediate colleagues, Drs. Hamer and Young. You have been good enough to ask my wife to share with me the honour of being your guest to-night. Although she has not a degree in medicine, my wife has always taken an active interest in the work of the Medical Officer of Health. In asking us here to-night you have emphasized the honour conferred upon me by His Majesty last November, and I can only thank you most deeply for your kindness towards us to-night.

Dr. Sykes, President of the Society of Medical Officers of Health, proposed the toast of "The Metropolitan Branch." He referred to the fact that Dr. Roberts, the President of the Branch, was now in his semi-jubilee year of office. As President of the Police Medical Officers' Association and of other Societies Dr. Roberts had distinguished himself.

The President (Dr. H. W. **Roberts**) responded.

The toast of "The Ladies" was given by **Prof. Kenwood.**

Miss Church replied on behalf of the ladies.

During dinner a band played, and after dinner an excellent entertainment was given, including some interesting experiments in memory and thought-transmission by Miss Inglefield and Mr. Sidney Gandy.

Letters of regret for non-attendance were read from Miss Octavia Hill, the Principal Medical Officer of the Local Government Board, Sir Thomas Stevenson, Dr. J. S. Cameron, Mr. Gomme, Dr. Edmunds, Prof. Simpson, Dr. Thresh, Dr. Reginald Dudfield, Dr. Bate, and others.

CURRENT PUBLIC HEALTH LITERATURE.

Bulletin de l'Académie de Médecine (Paris).

(No. 18.) Ankylostomiasis of Miners. Q. Manouvrlez, Valenciennes. (When mines are well ventilated they become cooler, and thus the conditions are rendered unfavourable for the growth of ankylostomata. The miners say that wooden props in the mines are "unhealthy," and experience has shown that they are right in one sense, as the wood becomes a nest for these parasites, especially when the bark is left on.)

(No. 21.) Breast Nursing by Working Women. P. Budin. (A placard has been posted by a manufacturing firm at Elbeuf, announcing that every facility will be afforded to women employed in the factory to enable them to nurse their infants, and proclaiming the advantages of breast nursing. The women are given leave of absence at certain hours to go to the crêche near-by and give their babes the breast, while 100 francs is deposited by the firm in the savings bank in the name of the child thus nursed by its mother, and the bank book is given to her. A certain number of the factories in France have organized crêches on the grounds, others set apart a certain room where the babes are brought at certain hours to be nursed. In Italy a room of this kind is obligatory in every establishment employing more than fifty women.)

(No. 22.) The Feeding of Infants. Porak.

A Statistical Study of Cancer Mortality in the Neighbourhood of Fontainebleau. Foucault. (The statistics for 40 years have been examined in order to determine whether the environing forests have had any influence in its occurrence. Cancer has been the cause of 7 per cent of the total deaths, that is, 759 out of 11,048. In examining the so-called cancer houses, he noted that they were always badly ventilated, with little, if any, exposure to the sun, in the lower and damper parts of the town, the dampness maintained by the building materials and defective drainage of sewage and rain water.

(No. 28.) Discussion on the Hygiene of Infants.

(No. 29.) Bromine in the Treatment of Anginas and Diphtheria. Bascomb.

(No. 30.) Epidemic Ulcero-membranous Stomatitis. Kelsch.

Semaine Médicale, Vol. XXIV.

(No. 13) Co-existence of Scarlatina and Typhoid Fever. F. Farnarier. (Analysis of 75 cases.)

(No. 16.) Typhoid Bacteriuria. F. Munch, Paris. (Besides disinfection of the urine as systematically as of the fæces, he advises disinfection of bath tubs used by persons who have or have had typhoid recently. Micturition during the bath is of frequent occurrence in typhoid fever. In local treatment of the bacteriuria, injections of potassium permanganate into the bladder have resulted in the immediate cure of typhoid bacteriuria in a number of cases on record. Munch emphasizes especially the enormous number of bacteria liable to be found in the urine, and the fact that it does not leave noticeable stains. Urine is evacuated much more frequently and copiously than the bowel dejecta, and is much more intensely infectious and for a much longer period. Ignored contamination from typhoid urine explains many puzzling infections and the contamina- of many water supplies. The bacteriuria does not appear to have any influence on the course of the typhoid fever in most cases, although instances have been published in which cystitis persisted after recovery; in Houston's case it developed after three years.)

(No. 17.) Intestinal Tuberculosis as a Cause of Invagination. L. Berard. (7 cases are described.)

(No 22.) Primary Tuberculosis in the Muscles. F. Lejars.

(No. 25.) Instillation of Methylene Blue (2 per 1000) as a preventive of Ocular Complications in Small-pox. Combemale. Abstract.

(No. 26.) Experiments on Tuberculosis during 6 years. Heymans, Ghent.

(No. 37.) Tuberculous Bacillemia. A. Jousset.

Anti-diptheria Serum in the Treatment of Whooping Cough. A. Passalaque.

Presse Médicale.

(No. 27.) The Milk Question from the Point of View of its Chemical Composition. P. Diffloth.

(No. 28.) Sickness and Mortality in the Army. Prof. L. Bard, Geneva. (The army physician's place is not in the rear with the lame and the halt; he should be in the very vanguard to select places for encampment, to watch over the sources of the drinking water, to direct the sanitary arrangements in general, matters which are left too often to some heedless second lieutenant.)

(No. 30.) A New Method of using the Tuberculin Test. L. Nattan-Larrier (Two new diagnostic applications of tuberculin have only theoretical value as yet, but from this point of view they are interesting. Marmorek calls the first the "tuberculin réaction précoce"; the other is known as the "tuberculin-réaction indirecte." The ordinary reaction to tuberculin is due to the presence of the tubercle, but the "early" reaction is due to the presence of the bacilli. After a few hours they are destroyed by phagocytosis and the reaction can no longer be obtained by this means. The suspected fluid is injected into the guinea-pig, and in half an hour 1/80 of a drop of pure tuberculin is injected directly into the brain. In one hour afterwards the temperature had risen to a maximum far above that of the controls. Marmorek places the time limit at two to four hours, but Larrier shows that after the first hour the controls' temperature may continue to rise while that of the infected animal subsides. The "indirect" reaction is based on the phenomenon that the ordinary tuberculin test may be induced, after inoculation with a tuberculous fluid, before the tuberculosis has really developed, the injection made about the sixth day after inoculation with the suspected fluid. The temperature reaction reached its maximum about the eighth hour in 4, about the tenth hour in 5, and after the twentieth hour in 2. It is thus necessary to take the temperature every three hours during the two days after inoculation. The difficulty of securing identical conditions at each repetition renders this mode of diagnosis impracticable.)

(No. 33.) Tuberculosis among Workers in Wool. Vermersch. (The workmen engaged in spinning the wool have to work in a minimum temperature of 75 F., and it is generally 100° or above. The air has to be saturated with moisture in order to conduct away the electricity generated in the wool by the friction. In order to maintain the conditions favourable to the working of the wool, there is an almost total lack of ventilation. In some of the workrooms he found 9·3 per cent of carbonic acid gas per 10,000, and 100,000 germs to the c.c. At the anti-tuberculosis dispensary at Lille, 109 out of 519 applicants were employed in this industry.)

(No. 37.) Diminished Acidity of the Blood in Tubercular and Pretubercular Conditions. Canter. (The standard of acidity in health is stated to be between 450 and 550 acid units. In the pretuberculous state it may drop to 400.)

(No. 48.) Preservation of Milk with Peroxide of Hydrogen. P. Desfosses.

Drinking Water for Cities. J. Courmont, Lyons. (He holds that it is impossible to exercise effective supervision of springs in the protected zones according to the French system, and advocates filtration.)

NEW PUBLICATIONS RECEIVED.

Reports to the Local Government Board on the Destruction of Rats and Disinfection on Shipboard. By J. S. Haldane, M.D., F.R.S., and John Wade, D.Sc. London: Eyre & Spottiswoode; Edinburgh: Oliver & Boyd; and Dublin: E. Ponsonby. 1904. (6d., No. 201.)

Mental Defectives, their History, Treatment, and Training. By Martin W. Barr, M.D., Chief Physician, Pennsylvania Training School for Feeble-minded Children, at Elwyn. 8vo, 152 Illustrations, pp. 368. Cloth 17/6 net. Rebman, Ltd., 129, Shaftesbury Avenue, London, W.C.

The Treatment of Syphilis. By F. J. Lambkin, Lieut-Col. R.A.M.C., Specialist at the Army Headquarters, India. Crown 8vo, pp. 60 + xii. Price 3/- net. Baillière, Tindall & Cox, 8, Henrietta Street, Covent Garden, London.

The Need of Sanatoria for Persons suffering from Consumption. By T. Orme Dudfield, M.D. (Reprint from *Tuberculosis*, December, 1904.) Adlard & Son, Bartholomew Close, E.C.

Woman's Place in Sanitary Administration. By T. Orme Dudfield, M.D., Medical Officer of Health of the Royal Borough of Kensington. Adlard & Son, Bartholomew Close, London, E.C.

La Scelta dell' acqua potabile. By Dr. Lorenzo Verney. (Reprint from *Policlinico* [Practical Section], 1904.)

Studies of the Food of Maine Lumbermen. By C. D. Woods and E. R. Mansfield, Washington, U.S.A. Government Printing Office.

Chemistry in Daily Life. Popular Lectures by Dr. Lassar-Cohn, Professor in the University of Heidelberg. Translated by M. M. Pattison Muir, M.A. 3rd Ed. H. Grevel & Co., 33, King Street, Covent Garden, London, W.C.

Some Statistics of Garbage Disposal for the Larger American Cities in 1902. By C. E. A. Winslow and P. Hansen. (Reprint from American Public Health Association *Report*, vol. xxix.)

Changes in the Bacterial Flora of Sewage during Storage. By C. E. A. Winslow and D. M. Belcher. (Reprint from *The Journal of Infectious Diseases*, vol. i., No. 1, January, 1904.)

An Improved Method of Constructing Shortened Life Tables for Public Health, Comparative Statistics. By T. E. Hayward, M.B., F.R.C.S. (Reprint from *Journal of Hygiene*, vol. v., No. 1, January, 1905.)

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SPECIAL NOTICES FOR THE MONTH.

MEETINGS OF THE SOCIETY.

AT 9, ADELPHI TERRACE, 7.30 P.M.

Friday, February 10th. "The Reform of the Milk Supply," by Dr. G. F. McCleary, M.O.H., Battersea.

Friday, March 10th. "Disinfection of Rooms—a comparative study," by Professor Delépine.

*Friday, April 14th. "The Administration of the Midwives Act," by Dr. G. H. Fosbroke.

* The Council meets on this date.

NORTH-WESTERN BRANCH.

February 17th.

March 17th. "School Sanitation and the Duties of School Medical Officers," by Dr. A. Greenwood.

April 14th. "The Midwives Act," by Dr. E. Sergeant.

May 19th. "The Influence of Privy-Middens and Water-Closets on the Annual Epidemics of Zymotic Diarrhœa and Typhoid Fever," by Dr. A. W. Martin.

June 16th. "Discussion on the Housing of the Working Classes in Rural Districts." Opened by Dr. T. W. H. Garstang.

WEST OF ENGLAND AND SOUTH WALES BRANCH.

February 16th, at Newport. 1.—The action of the Merthyr U.D.C. under the Housing of the Working Classes Acts, with Plans of Houses built; Dr. D. J. Thomas. 2.—Improvements desirable in the construction and administration of Slaughter Houses; Dr. J. Howard Jones.

March 16th, at Bristol. Papers by Dr. D. S. Davies, and Professor Kent (Professor of Bacteriology, University College, Bristol).

SOUTHERN BRANCH.

April 7th. At Southampton.

NORTHERN BRANCH.

February 24th. At Newcastle-on-Tyne.

April 28th. At Darlington.

June 23rd. At Hexham.

October 27th. At Newcastle-on-Tyne.

Continued on p. xii.

Epsom College.—Mrs. Skinner, widow of the late Medical Officer of Health for Willesden, is a candidate for a pension. Subscribers to this Fund are invited to give their votes in her favour.

Carbolic Acid or its Bactericidal Equivalent.—The Public Health Committee of the Chelsea Borough Council has decided to modify the schedule for the supply of carbolic disinfectants so that the price shall be based upon the germicidal equivalent of the preparation and not on its volume. In the case, for example, of a tender requiring 2000 gallons of carbolic acid or its germicidal equivalent 200 gallons of any disinfectant having a guaranteed carbolic acid coefficient of ten would represent the same germicidal efficiency, and if the prices quoted were 1s. 6d. per gallon in the former case and 4s. in the latter there would obviously be a considerable saving; the cost would be £40 instead of £150.

Medical Sickness and Accident Society.—At the last general meeting it was resolved that all members of the Society who reach the age of 65, in sickness benefit should receive a cash bonus of 10 guineas in respect of every 1 guinea of weekly sickness benefit which they had secured. A statement has been produced to the Committee showing that these bonuses had been paid to all the members so far entitled to them, nearly £1,000 having been disbursed in this manner. The usual amount of the bonus is £42, and to many of the recipients the cheque for this amount came as an agreeable surprise. It is paid to them at the time when, through their having attained the limit of age allowed by the rules, they are no longer entitled to draw sickness pay. Prospectuses and all particulars on application to Mr. F. Addiscott, Secretary, Medical Sickness and Accident Society, 33, Chancery Lane, London, W.C.

School Hygiene.—A Conference on School Hygiene, under the auspices of the Royal Sanitary Institute, as a preparation for the International Conference upon the same subject to be held in London in 1907, will be held in the Great Hall of the University of London from the 7th to the 10th of February, under the presidency of Sir Arthur W. Rücker, M.A., D.Sc., LL.D., F.R.S. A discussion on "Physical and Mental Development during School Life" will be opened by Miss A. J. Cooper, of Oxford; on "Physical Inspection" by Dr. Chalmers, of Glasgow; on "Building and Equipment (of Schools)," by Sir Aston Webb; on "Sanitary Inspection (of Schools)" by Dr. H. Leslie Mackenzie, of the Scottish Local Government Board; on the "Training (in Hygiene) of Teachers," by Professor C. S. Sherington; and on the "Training (also in Hygiene) of Scholars," by Professor Findlay. An exhibition of school furniture and appliances will be opened during the conference. Particulars and tickets of admission, which cost 10s. 6d. for persons not members of the institute, may be obtained at the offices of the institute, 72, Margaret Street, W.

Destructors.—The Horsfall Company have issued an illustrated list of the numerous destructors erected by them with particulars relating to them, which will be found useful to local authorities contemplating the destruction of "dust" by fire. Copies may be obtained free on application from the Company, Whitehall Road, Leeds, or 19, Old Queen Street, Westminster, S.W.

The Saxon Snell Prize.—This prize was founded to encourage improvements in the construction or adaptation of sanitary appliances, and is to be awarded by the Council of the Royal Sanitary Institute at intervals of three years, the funds being provided by the legacy left by the late Mr. Henry Saxon Snell, F.R.I.B.A. The first prize, which will consist of £50 and a medal of the institute, is offered in the year 1905 for an essay on "Domestic Sanitary Appliances, with suggestions for their improvement."

The Murdoch Trust.—The late Mr. John Murdoch, who resided at Craiglockhart in the County of Mid-Lothian, by his Will directed his trustees to employ the residue of his estate "*in instituting and carrying on a scheme for the relief of Indigent Bachelors and Widowers, of whatever religious denomination or belief they may be, who have shown practical sympathy either as amateurs or professionals in the pursuits of Science in any of its branches, whose lives have been characterised by sobriety, morality, and industry, and who are not less than fifty-five years of age.*" The trustees have resolved to carry out the terms of the bequest by granting donations or pensions to persons who comply with the above-mentioned conditions. Pensions will be given only from year to year, and may be increased, reduced, or withdrawn altogether, as the trustees see fit. Applications for forms of application should be made to Messrs. J. & J. Turnbull, W.S., 58, Frederick Street, Edinburgh.

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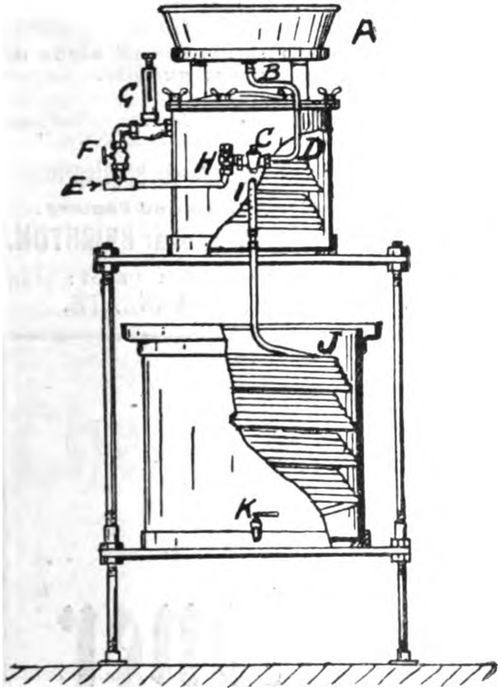

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CONTENTS.

No. 6, Vol. XVII., March, 1905.

PAGE

IAL ARTICLES—

HE MUNICIPAL CONTROL OF ZYMOTIC DISEASE (*Howard Wilkinson, D.P.H. Oxon.*) - 343
OSPITAL ISOLATION (*William Scatterty, M.A., M.D.*) - 356
CARLET FEVER; SOME POINTS IN THE PREVENTION OF HOSPITAL COMPLICATIONS AND RETURN CASES (*Alexander Anderson, M.A., M.B., D.P.H.*) 365
HE VALUE OF HOSPITALS FOR SCARLET FEVER (*W. G. Willoughby, M.D.*) - - - 373
OME PRACTICAL POINTS IN THE MANAGEMENT OF AN ISOLATION HOSPITAL (*A. Knyvett Gordon, B.A., M.B., B.C., Cantab.*) - - - 384

PAGE

SPECIAL ARTICLES (*continued*)—

THE INFLUENCE OF HOSPITAL ISOLATION ON SCARLET FEVER IN HEREFORD (*J. B. Fitzsimons, M.D.*) - - - 392
THE SUFFICIENCY OF ISOLATION HOSPITALS (*Henry Handford, M.D., F.R.C.P., D.P.H.*) - 397

ANNOTATIONS—

TYPHOID FEVER AT LINCOLN - 364
LOANS TO LOCAL AUTHORITIES FOR RE-HOUSING - - 372
CARBON DIOXIDE ALLEGED TO BE THE CAUSE OF BERI-BERI 383
TO ENHANCE RESISTING POWER TO INFECTION - - - 391
THE ESTIMATION OF CARBON MONOXIDE - - - - 391

Continued on Page vii.)

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CONTENTS—*continued.*

ANNOTATIONS (*continued*)—

PAGE
Prizes for Cleanliness - 396
Milroy Lectures - - - 398
Recommendations as to Measles - - - - - 398
The Result of the Cubicle System of Treating Infectious Disease - - - 407
Statistics for 1904 - - 408
Death of Dr. S. W. Abbott 408
Aids to the Diagnosis of Tuberculosis - - - 408
Attempt to force an entry into Small-Pox Hospital, Manchester - - - 408

LAW REPORTS—

Foster *v.* The Warblington Urban District Council - 399
Nathan *v.* Rouse - - - 402

LAW REPORTS (*continued*)—

PAGE
Bayley *v.* Cook - - - 403
Adulteration of Milk—Warranty - - - - - - 404
Adulteration of Brandy - 405
Excess of Sulphur in Coal Gas - - - - - - 406

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH, THE—

General Meeting - - 409
Metropolitan Branch - - 410
North-Western Branch - 411
Yorkshire Branch - - 412
CURRENT PUBLIC HEALTH LITERATURE - - - 413
NOTICES - - - - xi, xii

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The Journal of the Incorporated Society of Medical Officers of Health.

VOL. XVII. No. 6. MARCH, 1905

THE MUNICIPAL CONTROL OF ZYMOTIC DISEASE.*

BY HOWARD WILKINSON, D.P.H., OXON.,
Medical Officer of Health for the County Borough of Dudley; President of the Birmingham and Midland Counties Branch of the Incorporated Society of Medical Officers of Health.

THE duty of preventing or controlling the spread of certain infectious and epidemic diseases within their district, is laid upon Sanitary Authorities by the provisions of the Public Health Act, 1875; the Infectious Diseases Prevention Act, 1890; the Infectious Disease (Notification) Act, 1889, and the Extending Act, 1899; the Isolation Hospitals Acts, 1893 and 1901. The diseases practically to which these Acts are taken to apply are those scheduled in the Notification Acts: Small-pox, cholera, diphtheria, membranous croup, erysipelas, scarlet fever, typhus, enteric fever, relapsing fever, continued fever, and puerperal fever; there is power to include with the consent of the Local Government Board any other infectious disease.

The consideration of how best to deal with these and other contagious diseases, to us as official advisers of those who are charged with the administration of these enactments, is of much importance; no part of our work gives rise to more sense of responsibility and anxious thought on the part of the Medical Officer of Health, and to criticism on the part of his neighbours—of the latter we all get an abundance; but it may be advantageous for us at times to criticize our own work and the fruits of our labour. Perchance we may learn more from the morsels of wisdom culled from personal knowledge among those of our own calling than from all the freely expressed opinions of those outside our profession who, with imperfect knowledge of the theories, facts, or scientific inferences of preventive medicine, are ever ready to pass judgment upon us and our methods. It must

---

* Presidential Address.

I fear be admitted, nevertheless, that the methods of County and Town Sanitary Authorities in controlling zymotic disease do afford us at the present time serious ground for careful study, as they are to an extent lacking in scientific precision and exactness, and also not in accordance with well ascertained bacteriological and statistical facts. In some directions it would appear these methods go far beyond what is actually required, while in others they fall most lamentably short of what is needful to ensure the safety of the community. This condition of things is not altogether the fault of the Medical Officers of Health whose duty it is to advise the Sanitary Authorities in these matters, but it is in a large measure due to the present confused and confusing state of the Sanitary laws of our country; the persistent tinkering with these statutes, the policy of giving a little here and taking away a bit there, while always pandering to the opinions or feelings of the minority, who as a class in these questions really merit no consideration whatever. Many of our Public Health laws have been rendered futile in practice, for the reason that it has ever appeared to be the earnest desire of our legislators to provide a means of escape for those individuals who might resent any interference with their comfort or convenience which would tend to protect the community from conditions inimical to health. It is unnecessary, I know, to remind members of our Society of the difficulties that occur in the administration of the Public Health Acts; difficulties which have forced progressive Town Councils to apply at great cost for Local Acts of Parliament, and have frequently brought into disrepute, and even ridicule, the work of the most competent and vigilant Medical Officers of Health. It would be easy to give many examples of the truth of these statements; but perhaps the form of procedure for the closure of insanitary property which up to 1903 existed, the difficulty of dealing promptly and thoroughly with common nuisances, or of converting privy-middens or pail-closets to water-closets, and the Conscience Clause of the Vaccination Acts, will suffice to emphasize the absolute necessity which exists for the embodiment in a short and simple code of the Act of 1875, which in its day has paved the way to sanitary progress, but which is now thirty years old and may be considered obsolete, with all the other multitudinous Acts which bear upon the public health. At present, if we desire to ascertain the legal aspect of a sanitary question, and what our powers may be in the matter, too often we are confronted by several lengthy Acts of Parliament which appear to bear upon the point; after a careful and laborious search we discover what we deem is the right policy, only to find later on either that we have no statutory power, or that procedure would have been simplified under some section of another

Act which we never suspected to have any bearing at all upon it. Then if we appeal to the Central Authority, which ought to counsel and direct us, we receive the usual prompt intimation that they must decline to express an opinion. The urgent necessity that exists for a more concise and stringent code of sanitary law is apparent to all who have any practical knowledge of the administration of the Public Health Acts. The main defects in the present system I would classify :—

1. There are too many of these Acts.

2. Clauses which concern the Public Health are sandwiched between those which concern the police and criminals.

3. Sufficient power is not given to Sanitary Officers to act promptly and effectively in carrying out their duties.

4. The Public Health Laws are too permissive in their bearing and not sufficiently obligatory.

5. Sanitary Authorities are not compelled to make bye-laws to regulate building operations, house drainage, paving of courts and yards, provision of proper water-closet accommodation, provision of proper approaches to houses for the purpose of removing refuse.

6. Bye-laws with respect to closets and drainage. Sanitary Authorities are not compelled to make these applicable to old as well as new houses, which ought to be the case.

7. Old registered slaughter-houses. There is no power to deal with these.

8. Too many Public Health Acts are adoptive ; no future Sanitary enactment should be optional in large towns.

9. All Sanitary Authorities are not compelled to provide adequate and proper accommodation for the isolation of cases of infectious disease.

10. Sanitary Authorities have no real control over vaccination within their district.

11. There is no statutory power to compel re-vaccination.

12. There is no statutory power to detain persons of the vagrant class who, there is reason to think, may carry infection.

To turn now to the diseases scheduled under the Notification Acts, and the measures which are usually taken by municipalities to cope with them. The following questions arise: (1) Do Sanitary Authorities obtain the full value in the prevention of zymotic disease out of these Acts, and the preventive measures they have entailed; (2) Is the present list of scheduled notifiable diseases complete and satisfactory ? ; (3) Does the present system of hospital isolation justify its enormous cost ?

Small-pox.—The present means of preventing and controlling this zymotic by municipalities are vaccination, re-vaccination, isolation and disinfection. The first two of these methods if efficiently carried out, would protect the whole community from epidemic small-pox; there can I believe be no more certain fact in preventive medicine than this; it is borne out by the history and statistics of every epidemic of which we have knowledge, and is almost universally believed to be true by all Medical Officers of Health; but what is the condition of the law upon this? Vaccination and re-vaccination are not compulsory, and so a number of susceptible persons are ever ready to contract the disease and to expose others to the risk of infection; any ignorant person may go before a justice and state that he has a conscientious objection to his children undergoing the operation, and so plays his little part in rendering futile all the preventive measures for stamping out small-pox. When an outbreak of variola occurs, the Medical Officer of Health visits the lodging-house or slum where such cases usually occur, and humbly begs the denizens contained therein to allow the public vaccinator to confer protection upon them, since he has no official authority to do so; these people usually affirm that they have been vaccinated years ago, and before they will submit to such an indignity again, they demand a fee, or promptly remove to another town; there is of course no power to detain them, or to prohibit them from seeking work, if so minded, in a factory or workshop; but they usually are of a class that never work. With respect to re-vaccination, at present only a very small proportion of the population is re-vaccinated, and so there is always an enormous number of persons susceptible to the infection of small-pox in the country. The hospital isolation of small-pox cases is at present most expensive to municipalities, since they are obliged to provide separate hospital accommodation especially for small-pox; the establishment of such a hospital in a district is usually opposed by interested persons; the result of the Local Government Board regulations is that the local authority must either build and maintain an expensive hospital or combine with other authorities for such accommodation, the alternative being to close their fever hospital for other zymotics, and utilize it for small-pox. The cost of treating the sufferers in an epidemic is considerable, as it is impossible in most cases to obtain any payment from them. What is the remedy for all this? It is sufficiently simple; there ought to be, with our knowledge of this disease, no person in this country who is not protected by primary and secondary vaccination against this dreadful scourge. I would go even further, and express the opinion that vaccination should be compulsory every seven years until middle age is reached. There would then be no necessity for separate hospital accommodation for cases of small-pox; a few beds in the isolation or general hospital for emergency would suffice even for the largest cities, for epidemic small-pox would soon be unknown. With respect to vaccination and re-vaccination, the Medical Officer of Health should be authorized to perform the operation upon "contacts," and he should be remunerated in like manner to the Public Vaccinator; the control of vaccination should be transferred from Boards of Guardians to Sanitary Authorities, since it appertains to preventive medicine and public health, and does not properly form a part of Poor Law administration.

Persons of the vagrant class who are known to have been in contact with small-pox should be liable to penalty, or imprisonment in default, if they leave the locality without obtaining the written consent of the Medical Officer of Health. Why should these people be allowed to tramp about the country as they do, spreading disease, dirt, and crime? They are the failures and dregs of society, their lot in life is usually entirely due to their own shortcomings, and if they take up that position they should be made to feel that they have at any rate some responsibility to the community, and are not permitted to sow disease broadcast. Legislation to put down the class of professional tramps is urgently required; the suffering caused to their weary and miserable children who are dragged about with them, the mischief they do, the crimes they commit, and the diseases they spread, would quite justify professional tramping being made a criminal offence; if the offence was punishable by whipping, tramps as a class would soon disappear.

I have considered the municipal control of small-pox at some length, as its importance demands.

Cholera, *Diphtheria*, and *Membranous Croup*, the three diseases next on the schedule, require but little consideration. Of cholera in England we fortunately know but little, and we are well protected by Port Sanitary Authorities and Local Government Board Regulations against its introduction into this country.

Diphtheria.—In most districts there is provision for bacteriological examination and supply of antitoxin, and also available hospital accommodation. The term membranous croup we would like to see omitted from the list of notifiable diseases; probably all cases of membranous croup are really diphtheria, and it would be well that they should be called by that name; it is impossible clinically to distinguish between membranous croup and diphtheria. In my own district, out of 62 cases notified, 51 were stated to be diphtheria and 11 membranous croup; of the 11 cases of membranous croup 10 were notified by one practitioner; there would seem to be a disposition on the part of certain medical men to call all their cases membranous croup; perhaps the term may be less alarming to relatives or friends, but it would be for the public advantage if all suspicious cases were certified as diphtheria until bacteriological examination proved the contrary to be the case. There is no doubt that a large number of the notified cases are not true diphtheria, but cases of follicular tonsillitis, ordinary quinsy, or other form of septic sore throat. Bacteriological examination should be made in all cases to verify the diagnosis, but the position of the Medical Officer of Health in this matter is at present rather a difficult one.

Erysipelas.—Does any advantage result to the community from the notification of erysipelas? A large number of the notified cases in my district are inflamed wounds, or cases of facial erysipelas, a few are really cases of infective osteo-myelitis, others are lymphangitis and adenitis due to infection of minute wounds, others again are cases of phlebitis. I know of no preventive methods which the Medical Officer of Health can make use of, unless it be disinfection, which in the majority of these cases is quite unnecessary; the sole advantage of the notification of erysipelas appears to be the case when there is a parturient woman, or one near the time of her confinement, in the house; the Medical Officer of Health may in that case by his aid be able to prevent the spread of infection. There is in most towns no available accommodation in the isolation hospital for these cases, which are usually surgical; the general hospitals refuse to receive genuine cases of erysipelas, and in this they are no doubt right; the Union infirmary will not have them; it would appear therefore that they must be treated in their own homes. I do not think the cost of the notification of erysipelas can be justified by the results obtained from it; I fail to see any advantage in keeping this disease upon the notification schedule.

Scarlet Fever.—The question of hospital isolation in cases of scarlet fever is at present a vexed one for municipalities to deal with. For many years it has been the aim of progressive towns to secure the isolation in their fever hospitals of as large a number of the scarlet fever cases as might be possible; since the Notification Acts were passed enormous numbers of cases have been so treated and maintained at the public expense. Dr. Millard, a recent president of this branch, has I think very properly raised the question whether this hospital isolation of scarlet fever has brought about results commensurate with the cost entailed. In the town of Dudley it never has been the practice to remove cases of scarlet fever to the borough hospital, unless there have been very special circumstances which rendered removal desirable. Since notification became compulsory on Jan. 1, 1900, up to the end of Sept. 1904, there were notified in the county borough of Dudley 1094 cases of scarlet fever, of which 27 died.

Year.	Cases of Scarlet Fever notified.	Deaths.
1900	138	5
1901	164	5
1902	510	7
1903	179	7
1904	106	3

The case mortality of those notified is 2·4 per cent; of these 1094 cases only 3 were removed to hospital, a most insignificant number, so small that practically we may ignore it, and consider that none of the cases were isolated in hospital. If these 1094 cases had been removed, that policy would have necessitated the building of a hospital which would have cost thousands of pounds, and the maintenance of an expensive staff of nurses, while the cost of keeping each of these children for six weeks would certainly absorb a large sum. I cannot believe that the fatality of the disease would have been much less than 2·4 per cent if all these children had been removed to hospital; it is possible that there would have been less illness, but is that a very important factor to consider when the sufferers are chiefly little children who are below the age at which they ought to attend school; in the vast majority of cases too, they were practically well in a week. The measures which are resorted to in dealing with scarlet fever in Dudley are the following:—

1. Each case is visited by the Inspectors and careful notes taken.

2. Hand-bills giving simple instructions as to avoidance of infection and general management are left at the house.

3. All children in the house are rigidly excluded from school, and parents are advised to board them out if possible.

4. If a number of cases, are notified in children at a certain school, the school is closed.

5. Disinfection is done in all cases by the Corporation officials, when the medical attendant certifies that it should be done, at the end of a case.

6. In special cases only removal to hospital is advised; as in the case of scarlet fever occurring at a milk shop, or upon business premises where there is unusual risk of infection being spread. In some instances a child has been removed to hospital when there has been a woman near her confinement in the house. On two occasions children suffering from scarlet fever have been found in the same bed with a lying-in woman, no infection or puerperal complication occurred in either case; I think the risk of scarlatinal infection to puerperal women is believed to be greater than it really is.

It should be borne in mind in criticizing the policy of the Dudley

Town Council with respect to scarlet fever, that the town for its population has probably the lowest rateable value of any town in England. I think it must be conceded that the statistics given above will compare quite favourably with those of towns where scarlet fever cases are isolated in hospital as far as possible.

Measles.—There has been no attempt, so far as I have been able to ascertain, to secure by municipalities the hospital isolation of this zymotic. Notification has been tried in a few towns, with the result that it has been abandoned as extremely costly and quite futile; yet though the case mortality is in all probability considerably lower than that of scarlet fever; the number of deaths, owing to the great susceptibility of young children, is very large, and forms a black spot in our annual reports. Personally, I dread this disease in my district much more than scarlet fever, I consider it at the present time to be a more severe disease, but it is difficult to prove this statistically owing to the fact that measles is not notifiable. The cost of compulsory notification of measles by medical men is prohibitory, but now that Town Councils are the Education Authority, it should be easy to secure compulsory notification of this zymotic by teachers in charge of elementary schools. When a single case of measles is reported in a child attending an infant school, the Medical Officer of Health should advise the immediate closure of that school, and an attempt should be made to deal promptly and effectively with the earlier cases that arise. In Dudley the closure of the Infant Department directly two or three cases of measles occur has, I believe, saved us from several severe epidemics. It would seem to be the usual practice in most towns to wait until a high percentage of the infants are absent from school in consequence of measles, before advising the closure of the infant department; this practice of allowing the schools to close themselves, owing to absence of scholars, is scarcely in accordance with what we know of the disease, or with what is known as common sense.

In connection with measles and scarlet fever it is well to consider the control, or rather lack of control, of *whooping cough.* Medical Officers of Health and Town Councils usually adopt an attitude of *non possumus* with respect to whooping cough, and there is but little room to doubt that at the present time both measles and whooping cough are allowed to pursue their ravages unchecked. The mortality of children under five years of age from these two diseases is appalling, and yet we appear to be powerless to check this wastage of human life. We hear and read much now of the medical inspection of school children; elaborate tables are prepared, showing the number of inspections made, the amount of disease, deformity, and deficiency manifested among the inspected children, and in some large towns Medical Inspectors of school children have been appointed, whose duty it apparently is to examine the ears, throats, noses, eyes, and any other corporeal part where disease or defect may be discoverable. What statutory power exists for the examination of these children I do not know. It would appear to be an unwarrantable interference to examine them in this way; such matters do not properly form any part of the duty of sanitary or educational authorities; the examination constitutes an assault upon the child; parents would be justified in taking legal action for such assault committed upon their children.

These medical inspections have, however, undoubtedly brought to light an amount of disease and defect among young children which otherwise might have been unsuspected; but they are chiefly of service in directing attention to the dangers which infants incur by attending the infant departments of public elementary schools. Numbers of these children, many of them mere babies of 3 years old, are aggregated together in a close fœtid atmosphere for several hours each day, where they learn really nothing; the school is usually extremely dirty, the floors as a rule are not scrubbed oftener than two or three times in a year; the children sit as close to each other as possible, and are exposed to the greatest risk of contracting zymotic disease. What wonder need there be at the wholesale slaughter of children under five from measles, whooping cough, broncho-pneumonia, phthisis, other tubercular diseases, and scarlet fever; or need we express surprise at the number of young children we see with impetigo, eczema, tinea tonsurans, phthiriasis, bronchial catarrh, rickets, diarrhœa, and all the infantile ailments which are due to contagion, dirt, overcrowding, defective ventilation, lack of sunlight and fresh air? These infants go trudging to the school, often scantily clothed and insufficiently fed, in the coldest weather; if the mother dares to keep them from school, a "note" from a doctor is instantly demanded. The educational authorities have no legal power to insist on having these notes; they do not pay for them, and they would inflict the burden of paying for these certificates upon the poor parents, or else forsooth the doctor must give them free of charge, as he gives so many and various certificates for the State at a like remuneration.

It is to be borne in mind that children under five years of age are at ages when they are most susceptible to zymotic disease, and it is at this period of their lives that abundance of fresh air and sunlight are of the most vital importance; in the infant schools are to be discovered the foundations, in many cases, of that physical degeneracy of which we hear so much. Is it not to be expected that the elementary infant schools will provide a continuous crop of weedy, rachitic, tuberculous children, with unhealthy throats, noses, and ears, to swell the ranks of the physical degenerates: the infant school system is not responsible for all the physical degeneracy that we see in our large towns. But it certainly plays its part, and is no small factor among other causative conditions. Can any one doubt that these little children would be more healthily and less dangerously occupied if playing in the open air, in the public pleasure grounds or open spaces, or even in their own homes, than huddled together in a dirty room making clay models containing bacteriological cultures? The question has been asked, who profits by this system? Most certainly the children do not; possibly the parents do, because they have more time for gossiping with their neighbours, and the children eat less than they would do if playing in the open air all day. The profit of course really is to the educational authority; this is the secret of the situation and the system; the grant, and as large a grant as possible, must be secured at any cost, and so the attendance of these wretched children is enforced as far as possible, regardless of the disease and death which it occasions. I am unaware if any action has yet been taken by our Society to draw the attention of the Government to this iniquitous system: if not, it is to be hoped that we shall speedily move in the matter, and endeavour to secure the permanent closure of the infant departments of all elementary schools. A lowering of zymotic mortality would certainly soon be the result of this measure.

Typhus is a disease with which town councils have but rarely to deal. I should imagine many Medical Officers of Health have never seen a case; sanitation has caused the disappearance of this disease.

Typhoid, or *enteric fever*, is a disease with which we have frequently to deal. The death-rate from this cause is a sure index of the way in which town councils do, or do not do, their duty in sanitation. Water-borne epidemics in our large towns are fortunately rare; the care which is taken to safeguard public water supplies, and the general adoption of water-carriage for excreta, doubtless account for this; personal infection from a previous case is accountable for most of the cases we meet with; in my own district the first case is usually found to have some association with the proximity of a privy-midden to the cottage; polluted well-water may be excluded, as there are very few wells in the borough which are used to supply drinking water. I have found considerable difficulty in accounting for the first case of enteric in several small outbreaks, proceeding on the hypothesis that the presence of the bacillus typhosus from a previous case is necessary to causation; but is it not possible that under certain conditions the bacillus coli may give rise to a disease clinically indistinguishable from enteric fever? It is a significant fact that in some serious outbreaks of enteric due to polluted water, the water has been found swarming with bacillus coli, but not a single Eberth's bacillus has been discoverable. Of the advisability of removing all cases of enteric which occur in cottages to an isolation hospital, there can be no doubt; the fatality of the disease, its directly infectious nature, the suffering caused by it, the prolonged period of the illness, and the fact that it usually affects persons at an age period when their lives are most valuable to the State, renders isolation in hospital eminently desirable. Previously to notification becoming compulsory we had in Dudley frequently seven or eight cases of enteric in one house, which shows how directly infectious the disease is; now that we are able to remove the first case to hospital, it is rare to receive a second notification from the same house. The experience of some months in a hospital containing 1,000 enteric patients, during the South African War, has convinced me that the disease is most frequently conveyed to those in personal contact with the patient by their own hands; the most rigid cleanliness of the hands should be observed by those in attendance upon enteric patients; the hands should be immediately washed and disinfected after touching any part of the sufferer's body or his bed clothing, and on no account should the attendant's hands touch his face until they have been washed or dipped in disinfectant solution; the slightest carelessness in attention to these little details may be the cause of an enteric attack. With respect to the municipal control of enteric, immediately a case of enteric is notified in a cottage which has a privy-midden, this should be emptied without any delay, and a rigid disinfection of the receptacle carried out; the patient should be removed to the fever hospital at once, and the house thoroughly disinfected; if the case must remain at home for any reason, a portable commode in which all stools and urine must be placed until efficiently disinfected should be provided by the Corporation, and removed by their employées daily; disinfection of the urine is often not properly attended to.

Puerperal Fever.—Under the Midwives Act, increased power of controlling this disease in its many forms is conferred upon sanitary authorities. In most towns little is being done at present, except to form a register of the women who follow the calling of midwifery nurses; after April 1, 1905, it will be obligatory for all who wish to be placed upon the register to produce evidence of instruction and qualification in their art. It is difficult to see how poor women in provincial towns are to acquire the necessary training,—in Worcestershire I know of no facilities for the training of midwives. It would seem to be necessary for municipalities in the larger towns to make some arrangements for the proper training and qualification of midwives.

The terms relapsing fever and continued fever should be omitted from the list of notifiable diseases; these terms are misleading and confusing. I suppose cases notified under these headings, would be really cases of enteric or tuberculosis; personally, I have never received a certificate of either disease.

Two other zymotic diseases require consideration which are not included in the notification schedule. I allude to tuberculosis, and diarrhœa or zymotic enteritis. Tuberculosis is not notifiable at present, but it is confidently believed by capable Medical Officers of Health that it must come. Very grave responsibility rests upon sanitary authorities and general hospitals in the matter of controlling the spread of tuberculosis, and treating those suffering from it; the lot of the poor consumptive in our large towns is very sad. The suffering caused by the disease is great, while the danger of direct infection to other members of the family or those in daily attendance upon the case, have in all probability been minimized; the danger of personal infection from a case of phthisis to those occupying the same rooms is much greater than is generally conceded. It is impossible to do medical work among the poor in town slums without becoming painfully aware of the fact that chronic cases of phthisis with expectoration frequently infect perfectly healthy persons who are in contact with them. I believe it is the chronic cases of tubercular lung disease that cause dissemination of tuberculosis in a far greater degree than the flesh and milk of tuberculous animals; the milk of the human breast in a tubercular mother may infect her offspring; quite recently I have removed the breast for chronic tubercular disease in two young women, both of whom had a short time previously been suckling their infants. Very little is done by municipalities, Medical Officers of Health, or hospitals, for the sufferers from phthisis. No accommodation is provided by Town Councils for the isolation of cases of phthisis, the sanatoria can only take a small fractional number of the sufferers, the general hospitals bar their doors against them. Medical Officers of Health give instructions by card or handbill as to disposal of sputum and general management, but it is to be feared these instructions are very imperfectly carried out, and in any case are not likely to be of much avail when the sufferer with his constant cough is continually spraying the air of the room with tubercle bacilli. The fact is, nothing is really done in most towns to alleviate the sufferings of these people, or to prevent infection to others; they remain at home in most cases until they die a lingering death. Surely it should be feasible, by earnest effort on the part of municipalities or general hospitals, to provide some accommodation for the care and treatment of both acute and chronic forms of pulmonary tuberculosis; without some such available accommodation, notification, as has been well pointed out by Dr. Newsholme, is useless. It is to be devoutly hoped the time may soon arrive when notification and some provision for treating pulmonary tubercle among the poor will be available in all industrial centres. The funds which are at present expended by Town Councils in securing the isolation of children suffering from scarlet fever, would be better employed in combating that much more terrible scourge among the poor inhabitants of our large cities; the painful suffering, utter hopelessness and helplessness of the father or mother of a family who is striken with tuberculosis of the lungs, are incomparable with the condition of a child suffering from scarlatina. If sanitary authorities cannot be induced to provide some accommodation, then it behoves the general hospitals to set aside a ward or wards for the treatment of phthisis.

The control of zymotic diarrhœa does not offer a very promising field for sanitary authorities. The cause of the disease is not sufficiently well defined and accurately ascertained. The heat of the sun's rays acting upon the superficial layers of the earth, aided by decaying organic matter and microbial action, dust, flies, dirty milk, uncleanly feeding bottles, improper articles of food, want of breast milk, poverty, filth, overcrowding, defective sanitary conditions, have all been assigned a place in the causation of infantile diarrhœa. Probably the contamination of the milk which occurs in the house, and the increasing tendency among the poor to resort to bottle feeding, are very potent factors in causing this fatal disease. Town Councils who desire to lower their infant mortality rate would do well to abolish privy-middens, adopt and enforce a good code of building bye-laws, remove systematically and thoroughly all refuse and waste matters from back yards, keep their streets and courts thoroughly cleansed and watered, employ one or more capable lady health missioners, and arrange for a municipal supply of clean and wholesome sterilized milk.

Gentlemen, my paper contains but little that is not already sufficiently familiar to you; time and opportunity have failed me to prepare any elaborate statistics or new scientific facts or theories. I have been able only to lay before you a few of the thoughts and opinions, many of them doubtless likely to prove erroneous, that have grown from observation, experience, and laborious toil among the poor of a Black Country town.

HOSPITAL ISOLATION.*

By WILLIAM SCATTERTY, M.A., M.D.,
Medical Officer of Health for Keighley; President of the Yorkshire Branch of the Incorporated Society of Medical Officers of Health.

THE subject I have chosen for my paper is Hospital Isolation. I have been led to do so because it lends itself very readily to general discussion, and because the problems involved are of interest to every Medical Officer of Health. Many writers of late have approached the subject with diffidence, seeing that thousands of pounds have been spent and are being spent on the erection and maintenance of fever hospitals all over the country; and to question the utility or otherwise of hospital isolation at this stage, looks like locking the door after the horse is stolen. I would however deprecate such hesitancy, believing as I do that any investigation into the results derived from hospital isolation will strengthen our faith in isolation, although it probably will discover many weak points in our system of fever hospital administration.

It is not unlikely that many sanitarians entertained the hope that hospital isolation would stamp out, or at least very materially limit the spread of infectious disease, and we must ask ourselves how far such optimism has been justified, and at the same time question the wisdom or justice of blaming hospital isolation for failing to do what was obviously *ultra vires*. There are many factors at work in spreading infection, which are untouched by isolating known or notified cases of fever, and to expect that an epidemic could be completely prevented or stopped without combating such factors is unreasonable. That isolation of all notified cases should materially diminish the spread by removing known foci of infection, is however a reasonable requirement, and if heavy expenditure has been incurred in providing hospital accommodation a corresponding return is to be expected and asked for.

The first to seriously open the campaign against hospital isolation was Dr. Marriott, of Nottingham, and later, Dr. Millard, who in February, 1901, tried to show that it failed materially to reduce the fatality or prevalence of scarlet fever, and further that such isolation was not merely negative in its results, but in many ways positively harmful. I have no intention of analysing the statistics which induced him to arrive at this conclusion. That has already been done by Dr. Kaye and others, but what I would like to hear discussed is the charge of failure to meet reasonable expectation, and the cause or causes of failure if such exists; in other words, Is the principle, or the practice, of hospital isolation at fault? Given a number of facts or figures how many of us would deduce the same conclusion? For instance, Dr. Millard tells how in Leicester (1892) 144 scarlet fever patients were sent from hospital to make room for small-pox, and because no cases of fever occurred in any of the houses to which those patients were returned, he concluded that we must not limit the meaning of "return cases" solely to those of the same household, leaving it to be inferred that these 144 cases might have infected their neighbours, even although their own households were immune. Quite so, but may we not make the further deduction that the neighbours would also have escaped if the 144 had still been isolated in hospital? That surely must go to the credit side of the hospital account. We are further told (*Public Health*, February, 1902) that during the following two months 400 odd cases occurred, compared with 90 during the previous ten months. Granted that there were many susceptible children owing to there being no epidemic for years, it seems evident that the 144 foci were like torches set to fuel, and that the benefits of hospital isolation, so far as reduction of prevalence is concerned, in contrast to home treatment, were demonstrated lamentably. With regard to the reduction of mortality it is enough for me to know that hospital isolation reduces the prevalence of scarlet fever; that the mortality will fall *pari passu* requires no proof.

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* Presidential Address, October 20, 1904.

Dr. Kaye has I think fully shown the hopelessness of getting any satisfactory conclusion from a statistical comparison of towns differing widely from each other as well as from themselves in different years. He suggests that every Medical Officer of Health should rather compare the results, each in his own town, before and after the provision of hospital isolation. I am afraid the results as yet available are not reliable, owing to epidemic influences and the short period from which most of us can draw comparisons. In my own borough we have had hospital isolation for seven years, and if we compare the numbers notified before and since, the comparison would simply be between an epidemic and a non-epidemic period. I am certain, however, that the epidemic which compelled the erection of a hospital could not have been controlled so successfully had no such provision been made for isolating many of the cases. With regard to the percentage of fatal cases before and since hospital isolation was practised, as well as among those treated at home compared with those treated in hospital, I find the results are distinctly favourable to the fever hospital.

In the campaign against isolation hospitals the frequency of "return cases" is kept prominently to the front. That such cases do occur is common knowledge, but may we not too readily grant that they are always of hospital origin? It is the experience of private practitioners (if not of hospital superintendents) that similar cases occur in private houses, and I believe with equal frequency. There is this difference, however, that a second case in private practice is generally accounted for by defective house disinfection, or by supposing that the second contracted infection, say at school, just as the first did; but when the primary case has recently come from hospital it saves trouble to call the second a "return case." Thus the blame is transferred from an indefinite and irresponsible cause either to the hospital superintendent, who is thought guilty of indiscretion or neglect, or to the hospital system which specializes in this particular phenomenon.

Let us now for a moment consider some of the causes which are said to produce these return cases. Premature discharge before desquamation is completed, need only be mentioned as an exceptional cause requiring no consideration. Otorrhœa and rhinorrhœa are much more likely causes, although these cannot always be attributed to hospital influences. A rhinorrhœa which has ceased for some days previous to discharge, but which recurs as the result of cold contracted after the final bath, or of thoughtless exposure after returning home, can only be indirectly debited to the hospital. No general practitioner pretends to say that otorrhœa or rhinorrhœa are unknown among scarlatinal cases treated at home, where of course there may be less risk of the rhinorrhœa recurring, simply because the discharge bath is less often indulged in. In either case the difficulty is overcome by keeping the patient in a disinfected room for a day or two after the discharge bath has been given. Especially in cold weather and in the case of girls with long hair, care should be taken in this way to avoid the risk of catching cold and setting up the catarrh afresh.

Another, though not a common cause of "return cases," is the germ-laden residual air in the lungs of patients sent out from a ward crowded with acute cases. This, if a cause, is certainly a diminishing one, seeing that in most fever hospitals convalescents are now removed to a separate ward. The difficulty is further overcome by isolating cases about to be discharged in a convalescent or discharge ward for a few days, as previously suggested after the final bath. In my opinion this plan is to be recommended, although the economist naturally asks: "Why further isolate, seeing that even without that discharge ward at least 97 per cent of cases go home without giving rise to any return cases?"

Overcrowding or the aggregation of acute cases as a cause of return cases is problematical, and at most can only act indirectly. It has been stated that overcrowding tends to increase the proportion of septic complications, and naturally that would be a likely result. An increase in the number of beds in a ward during an epidemic does not always mean a corresponding increase in the number of nurses, and consequently mistakes are more readily made by an overworked staff. Apart therefore from the transmission of septic complications (of which more later), whether by direct or indirect means, the aggregation or overcrowding of acute cases,is always to be discountenanced. Even when resorted to during epidemic times, under the impression that it may be the less of two evils, we find we cannot break the elementary laws of hygiene with impunity. At the same time overcrowding, or in other words, a vitiated atmosphere with consequent lowered vitality, is in my experience much more frequently met with when infectious cases are treated at home, and this by a sort of auto-intoxication may explain the commencing rhinorrhœa exhibited by some children on admission. I fully agree with Priestley, Millard, and others, in preferring to admit only such cases as cannot be isolated at home, to overcrowding one's wards in the attempt to cope with every case reported during an epidemic.

It has been suggested that infection carried out from hospital has an "exalted virulence" compared with that contracted in the ordinary way. Such may be the case, although I have seen no reason to suspect that a "hospitalized strain" was being established. When many possibilities of infection exist, with only 1 or 2 per cent of return cases annually to draw conclusions from, one cannot speak from personal experience with certainty; but with such a classical example as Leicester before us, we should be able to find some evidence in support of the theory. You remember how 144 "carefully selected cases" were sent straight to their homes "in all stages of the disease, and while very many must undoubtedly have still been highly infectious." Some may not have become "hospitalized," but if the theory of an exalted virulence were correct, one would hardly expect Dr. Priestley to report that "the type of the 1893 epidemic must have been very mild, as the death-rate (calculated on certificates) is only 3·5 per cent." The nearest approach which I have seen to exalted virulence was when (under mistaken diagnosis) a case of measles was admitted into a scarlet fever ward and there contracted scarlatina. The fever was more than ordinarily severe; but I attributed the extra severity to the superimposed combination, and not to any exalted virulence inherent in the scarlet fever infection.

Before leaving this subject one might again ask, "Is the principle or the practice of hospital isolation most at fault in producing 'return cases,' or has either as much to do with their origin as outside and home influences"? My own opinion is that in a properly equipped hospital the number of such cases may be reduced to vanishing point, and that in many instances even hospital maladministration is debited with more than its own share of blame. The following facts have contributed to this conclusion. A certain hospital in the West Riding receives patients from some half-dozen different Sanitary Authorities: "A" Authority has not had a return case for years, although several hundred cases have been admitted; "B" has had 1 per cent; "C" has 2; and "D" 4 per cent. The same care is exercised over all; or, if possible, greater care is taken in discharging cases from those districts where experience has shown the need for closest supervision. The obvious inference seems to be that home disinfection is more thorough in some districts than others, and that central even more than hospital administration requires investigation and improvement. It does not follow that home disinfection has been efficient simply because no second case has developed among the inmates during the absence of the primary one; any more than it follows that a second case developing within a week of the return of the primary one from hospital is a return case. We all know how readily a book or a toy escapes disinfection only to be brought out on its owner's return, and yet this neglected toy may have more to do with the so-called return case than any "persistent infectivity" brought from hospital.

What sounds a very serious indictment of hospital isolation, has been made by Drs. Gayton, Millard, and others, in the following terms: "That otorrhœa and rhinorrhœa are propagable is proved by the fact that given a case of either kind, not infrequently it is communicated not only to patients in contiguity with the one affected, but to others in remote parts of the ward." The same subject has been touched upon when considering the evil effects of overcrowding. It was shown that a vitiated atmosphere had a baneful effect on the system generally, and when to that there is the additional danger locally of the direct transmission of streptococcic material from patient to patient, the position is pregnant with risk to every inmate of the ward. To me, however, the indictment is one of overcrowding and mismanagement, which no one defends, rather than of the principle of hospital isolation. Millard says: "It is useless to urge that proper hospital administration, even though aided by every appliance that money can buy, should be able to obviate the danger here indicated." Theoretically one cannot absolutely obviate the danger, but I maintain that in practice we can. Understand that I wish neither to defend the system of overcrowding septic cases, nor to champion the cause of fever hospitals generally; but I do say that careful management in a properly equipped hospital can reduce to a minimum the risk of otorrhœa or rhinorrhœa being communicated either directly or indirectly. Dr. Curgenven, quoted by Millard, argued that "If we would never think of placing cases of wounds in a ward along with erysipelas or gangrene, neither should we place cases of scarlet fever in a ward with others suffering from scarlatinal otorrhœa." Quite so; but sometimes in a general hospital the surgeon has no choice, any more than the fever hospital superintendent. But do we always take the same care that the surgeon does? The surgeon makes certain that everything which has come in contact with the septic part is carefully and immediately destroyed; and surely we can take equal care to guard against the discharge from nose or ear becoming dried and disseminated throughout the ward. The same indictment might with equal force be urged against consumptive sanatoria, and yet I think it has been demonstrated that such institutions can be carried on successfully without the atmosphere of the ward teeming with tubercle bacilli. So long as frail human nature has to be relied upon to maintain a constant fight against these septic germs, no half-hearted vigilance is sufficient. Nor do I wish to imply that hospital administration has reached a standard of perfection, although to be told that it is practically impossible to obviate the danger of septic complications is not the best stimulant to continued effort. Is it not better to have tried and failed, than never to have tried at all? There is no doubt but that the warning given by certain opponents of hospital isolation is opportune; and as showing that I am not prepared indiscriminately to defend the administrative practice of every hospital, I may mention that in a large Midland fever hospital it was the custom some years ago for two or three children to be bathed in the same water, for five or six to have their faces washed in the same basin and to be dried with the same towel, and, as if to make direct communicability a positive certainty, the same cloth or sponge went the round of the ward. I don't suppose this was done with the consent or knowledge of the Medical Superintendent, but I have the authority of nurses for saying that they were accustomed to this routine, and that they were never taught that there was danger in the dirty practice. In the same wards the nurse accompanying the doctor in his rounds carried a tongue depressor, which likewise went the round of the mouths of simple and septic with unvarying impartiality! I mention this fatalistic example purely as an object lesson, and sincerely trust I am not guilty of trying to take a mote out of a brother's eye and all the time have a beam in my own. If however, for economic or other reasons, an hospital is under-staffed or otherwise badly equipped, results are obtained which are not only worthless as a basis upon which to build a scientific theory, but damaging to institutions where the managers are more liberal and the administration more thorough.

The next bugbear met by the opponents of hospital isolation is "mixed infections." For long this seemed to me a real difficulty. Cases of so-called post-scarlatinal diphtheria cropped up, which I could only account for by defective administration. The occurrence, for instance, of chicken-pox or measles in a scarlet fever ward is in rather a different category from post-scarlatinal diphtheria, and can only indirectly be considered due to maladministration. The possibility of the former combination should be averted by a reasonable amount of care being taken to prevent the patient being admitted except into a separate isolation ward. This of course implies the hearty co-operation of the private practitioner, who in notifying the scarlet fever would also draw the attention of the Medical Officer of Health to the fact that the invalid had also been exposed to other infection. The objection is that the private attendant might not be aware of the possibility of the minor infection, and so far as it goes that objection holds good. At the same time I cannot think many such mixed infections would arise to damn a hospital if we secure the assistance of the general practitioner, and have at our disposal the necessary means for isolating questionable cases. There still remains, however, the more serious complication to which the terms "mixed infection" or "cross infection" specially refer. I mean the occurrence of diphtheria in a scarlet fever ward, or *vice versa*. A mistake in diagnosis may be the means by which the second infection is introduced, and this can only be overcome by the proper use of a receiving ward. The risk of cross infection from one ward to another is very slight, and can only arise when the administration is defective. It will still be urged that notwithstanding all precautions post-scarlatinal diphtheria will continue to occur, and I grant it may. The contingency however, is very remote if guard is kept upon a channel too little suspected or, it may be, too often neglected. The following experience will explain my meaning. During the early part of this year a case of post-scarlatinal diphtheria was detected in a large scarlet ward. So certain was I that no mismanagement on the part of the nurses or attendants was to blame for the case, that I decided to swab every scarlet throat showing the least exudation immediately on admission. At the end of a few months seven patients out of eighty-four scarlet fever admissions were declared by the county bacteriologist to have typical diphtheria bacilli in their throats. These cases happily were separately isolated, and no mixed infection has since occurred; but had they been treated at home a similar result could hardly be expected, and yet I question if home treatment would be debited with causing that mixed infection so conveniently called "an hospital phenomenon."

It is foreign to my subject to discuss the problem as to whether scarlet fever and diphtheria can run their typical course simultaneously. That the Klebs-Löffler bacillus is often found in the throat of a patient suffering from typical scarlet fever is beyond question, and although scarlet fever is the predominating factor in the illness, it is undoubtedly possible for the diphtheria bacillus to show little or no virulence in one patient, and yet to set up post-scarlatinal diphtheria in another.

Before leaving the subject of diphtheria complicating scarlatina I would enter a *caveat* against adopting the views expressed by Dr. Thomas, in his recent report to the London Education Committee, with regard to the pseudo-diphtheria bacillus. Dr. Thomas states his opinion that the pseudo bacillus may safely be ignored. While this may be so among children with unimpaired resisting powers, I am sure you would have cause for regret were you to ignore that bacillus in a scarlet fever ward. At one time I held a similar view, but sad experience convinced me that it was fatal policy to ignore or underestimate a foe. I have previously recorded my opinion that environment can so modify the pseudo or Hoffmann bacillus that it can assume the virulent characteristics and produce results indistinguishable from the true Klebs-Löffler bacillus. The grounds for this opinion are largely circumstantial; at the same time I think they are suggested by bacteriological results. For instance, we find true and pseudo bacilli in the same throat simultaneously; in another, one week we may find only true, next week only pseudo bacilli, and, subsequently, true or pseudo alternating; a case of scarlatina exhibiting pseudo bacillus will give rise to typical post-scarlatinal diphtheria in the patient in the adjoining bed; and two members of one family in a moorland cottage will show within a few days of each other the first pseudo and the second the true diphtheria bacillus, with no possibility of infection except from one to the other. It is because the same pronounced clinical symptoms are rarely found with the pseudo bacillus as with the true, that one is apt to overlook the existence of the milder type of infection, and yet I have this day seen tracheotomy performed on a child in whose throat and larynx only the bacillus Hoffmann could be found. We are however discussing an administrative rather than a bacteriological problem, and therefore I would urge that scarlatina complicated with any and every type of bacillus diphtheriæ be rigorously treated in separate isolation wards. If care were taken on admission to eliminate such mixed infections, my contention is that the possibility of post-scarlatinal diphtheria occurring in an ordinary scarlet fever ward would be a negligible quantity, even in that preventive system described by S. D. Marriott, of Nottingham, as a system "by the operation of which the infective sick are herded like dumb driven cattle in pest-houses miscalled isolation hospitals."

A writer, already quoted, prophesies that hospitals have had their day. With that I cannot agree. Nay, rather I feel sure the adverse criticism referred to above, by drawing attention to defects in management, will bring about an improvement in administrative detail, and as time and experience bring improved methods of treatment and an increased faith in the benefits to be derived therefrom, there will result an extension and not a diminution of hospital isolation.

TYPHOID FEVER AT LINCOLN.

An alarming outbreak of typhoid fever has occurred in Lincoln. The first case was notified on December 2nd, but it was not until the 22nd of the same month that the second case was reported. By January 10th the number of cases had risen to eighteen, and by the middle of February about 600 cases had been notified. A sample of water examined in the middle of January showed that sewage pollution had taken place, and the public were at once requested to boil water to be used for drinking, and also milk. Samples of the water were taken subsequently by Dr. Reece, Inspector of the Local Government Board, and submitted to Prof. Klein. Typhoid bacilli are stated to have been found in the sample taken from the intake well connected with the river Witham. After filtration the bacillus was not discovered. The water supply of Lincoln is derived from surface water, the river Witham, the Ballast Pits, the Hartsholme Lake, the Pyke Drain, and the Prial Brook. The Corporation took over the waterworks in 1871. In 1883 the Medical Officer of Health called their attention to the wholly unsatisfactory state of the water supply. In 1885 the Local Government Board informed the Council that they "will incur a grave responsibility if disease should hereafter spread in the city." In the following year, a Local Government Board inspector drew the Council's attention to "the unsatisfactory state of the water supply." The Council, however, disregarded the warning.

In 1887 the Local Government Board again pointed out "the unsafe character of part of the water supply." The Medical Officer again pressed, in 1889, for the matter to be taken up seriously, and again it was decided that there was "no ground for complaint." In 1892 a special committee reported that, though the water was not good, it was sufficient in quantity. No recommendation was made as to improving the quality. In 1892 a further notification from the Local Government Board was sent, and at last, in 1898, the Corporation undertook to consider the best methods of insuring an increased supply of water, and while it was felt that the process of filtration to which it was subjected would prevent any contamination, it was resolved to seek another supply by boring, and the contract for the operations was signed in 1902. Boring was carried out to a depth of 2,000 feet—which is said to be the greatest depth of any similar work in England; but, unfortunately, the contractors lost one of their machines, and the operations have been delayed.

Unfortunately, both Dr. Harrison, the Medical Officer of Health, and the Sanitary Inspector were ill, the former with bronchitis, and the latter with typhoid, which has proved fatal. Nottingham, however, came to the assistance of Lincoln, by sending over Dr. Reece Jones and a Sanitary Inspector.

SCARLET FEVER; SOME POINTS IN THE PREVENTION OF HOSPITAL COMPLICATIONS AND RETURN CASES.*

By ALEXANDER ANDERSON, M.A., M.B., D.P.H.,
Medical Officer of Health, Wortley Rural District; late Medical Superintendent, City Hospitals, Sheffield.

I do not propose in this paper to argue the case for or against the isolation of scarlet fever in hospital. My object is rather to discuss from a practical standpoint some of the more important questions involved in hospital treatment and administration. We are all, I suppose, willing to admit that there are many serious difficulties to be overcome in the administration of isolation hospitals, both in securing to the individual patient the same chance of recovery and of freedom from extraneous complications and risks which he would have if treated at home, and also in preventing the discharged patient from conveying infection outside the hospital gates. Whatever judgment may ultimately be pronounced on the value of hospital isolation of scarlet fever will depend to a large extent, though not entirely, on the answer that is given to the question: Can the untoward results of hospital aggregation be overcome, or are they inherent in this method of treatment? It is obviously hopeless to arrive at any satisfactory conclusion on the larger question at issue, until it has been clearly shown that our administrative methods are incapable of further improvement. That has not, I think, been demonstrated. Moreover, the whole discussion as to the value of hospital isolation has been for the most part confined to scarlet fever. This is probably due to the fact that septic complications and return cases are far more common in scarlet fever than in diphtheria, and the evil effects of aggregation are consequently more obvious in the former disease. But if these can be eliminated by improved administrative methods, the two diseases will be placed on exactly the same footing, and the arguments as to unrecognized cases, protracted infection, and so forth, will apply in the one case as in the other. The consideration of the factors that are concerned in the production of hospital complications is therefore the question to which we ought in the meantime more particularly to address ourselves.

The chief dangers that have to be guarded against in the hospital treatment of scarlet fever are: (1) The infection of the patient with another disease, such as diphtheria, and the spread of this through the ward; (2) The infection of the patient with another type of scarlet fever or with septic matter derived from other patients; (3) The infection of other parts of the patient's body from the original focus; and (4) The discharge of the patient in an infectious condition. That these are very real dangers, no one who has had any considerable hospital experience will deny. The problem how to prevent their occurrence in actual hospital practice is a question partly of individual treatment and partly of administration. And the way in which we attack this problem will depend to a considerable extent on the mental attitude we assume as to the causation of hospital complications—whether they are mainly the result of air convection of particulate infective matter, or are chiefly due to direct transference of infection by the medium of utensils, nurses, etc., or by actual contact of the patients with one another. This point is also of importance in connection with the spread of infection in schools and in the wards of children's hospitals. Some observers have lately attempted to minimize the pernicious influence of slates, slate pencils, and other articles in the spread of diphtheria in schools, but those who are acquainted with the habits of children both in and out of school will have difficulty in accepting this view. The experiments of Flügge and of Dr. Mervyn Gordon have shown that droplets of saliva can be emitted from the mouth during the acts of loud speaking, coughing, or sneezing, to a distance of 40 feet in a closed room, and may remain suspended in the atmosphere for several hours (Flügge). It might, therefore, be legitimately argued that the air of a scarlet fever ward must become charged not only with the organism of scarlet fever, but also with other pathogenic organisms derived from the mouths of the patients. Whether this actually occurs in a freely ventilated ward to such an extent that it becomes a matter of moment from an administrative point of view requires, I think, further proof, and experiments might well be made on the bacterial content of the air of wards worked under different conditions. The dosage also has to be taken into consideration, and it is doubtful whether the aerial dosage can ever be in a well-ventilated ward at all comparable to the dosage that may be directly conveyed by means of infected utensils, etc. In grossly overcrowded and imperfectly ventilated wards, however, this aerial factor must operate to some extent, and for this reason acute cases should be removed as far as possible from convalescents. My own opinion is that sufficient attention has not been paid to the direct transference of infection, and that the most careful aseptic precautions are necessary equally in a fever as in a surgical ward. If the nursing arrangements in a fever ward were so directed that no infection could reach the patient except through the air, I think a great advance would be made in the prevention of secondary complications, relapses, and even of "return" cases. This method Dr. Louis Parkes (*Public Health*, June, 1903) applied with success in the prevention of outbreaks of diphtheria in a children's hospital, and I agree with the following remarks he makes regarding the application of this system to fever wards: "The system of sterilization of utensils aims at the isolation of the patient in his ward so far as regards infections transmitted by direct contact. . . . If a child sent to a fever hospital, whether with scarlet fever or diphtheria, can be isolated in his ward to the extent that he is not exposed to infection from his neighbours—either the infection of the disease from which he is not suffering, or the more virulent form of infection of the disease from which he is suffering, which may very well happen under existing circumstances to be communicated to him—a great advance will have been made in securing true isolation in institutions which are now only isolation hospitals in a somewhat limited sense." Now if aerial infections are considered of paramount importance, it must logically follow that the patient should be isolated in a separate room from beginning to end of his illness. This would involve an entire reconstruction of our hospitals, and would greatly add to the expense of new buildings, which is already considerable, and would require large additions to the nursing staff. A much larger number of acute rooms than exists in most hospitals is, I think, desirable; but in the meantime we have to administer hospitals built on the old plans, and it is worth while enquiring whether good results cannot be obtained in ordinary wards simply by the employment of strict aseptic methods. My own experience during the last three years partakes of the nature of an experiment in this direction, and I will mention some of the practical details that have been adopted in carrying out this idea. I have been compelled, in fact, to place reliance on these methods, because the hospital which I have at present to superintend is badly constructed, there being no reception wards, isolation or discharge blocks. To effect the separation of acute from convalescent, and simple from complicating cases, I have therefore only been able to utilize different rooms in the same pavilion, and all patients have been discharged straight from the wards. Owing to this difficulty of classifying the patients, I keep the acute cases in bed longer than is absolutely necessary; not because they are not fit to get up, but because they cannot come intimately in contact with one another while in bed. The wards are very freely ventilated, and the convalescents are kept in the open air all day long if the weather permits. The principles of open-air treatment are, I think, equally important in the case of scarlet fever as in the case of tuberculosis, and open-air shelters and playing sheds for use in wet weather are desiderata in all fever hospitals.

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In the acute stage of the patient's illness, the internal administration of perchloride of iron in large doses is, I believe, of great value in enabling the system to get rid of septic infection, and in this view I am supported by such authorities as Isambard Owen, Dyce Duckworth, Dr. Latham, etc. (*Lancet*, Nov., 1904). Local antiseptic throat treatment is carried out in every instance by forcible syringing with a 4-ounce ball syringe, fresh chlorine lotion being invariably employed. I have no doubt that many home-treated cases of scarlet fever get quite well and are able to get rid of infection without any local treatment worthy of the name. I am convinced, however, that in hospital practice disinfection of the throat, so far as this can be efficiently performed, is absolutely necessary at the onset in bad cases, and at the conclusion of the illness in every case. Owing to the chances of repeated re-infection in hospital, I see no other way of maintaining a patient's throat at all events comparatively free from infection. I think however, it may be overdone in the acute stage, and after a few days, if there is much ulceration of the tonsils and soft palate, it may with advantage be discontinued. My practice is to discontinue the local throat treatment when the patient gets up, resume it again towards the end of the fourth week, and continue night and morning till he is discharged.

Irrigation of the nose and ears with saturated boric lotion is practised if there is any discharge. But whenever a syringe is used there are innumerable opportunities for the transference of infection, if the same syringe is used and if the nurse passes from one patient to another without cleansing her hands. Therefore each patient is provided with a separate set of requisites for his sole use, such as syringes, enamel bowls, nose and ear nozzles, towels, throat cloth, etc. These are kept in the patient's locker, and are not used for any other patient in the ward. As soon as the syringing process is finished, the nozzles and bowls are boiled for five minutes and replaced in the locker. The nurse after attending to each patient washes her hands and immerses them in izal lotion.

All spatulæ, specula, probes, etc., after being used, are immediately placed in carbolic lotion and then boiled.

Feeding utensils, such as mugs, are kept separate. This is really important, for I have seen in a children's ward in a general hospital each child infected with contagious eczema through the medium of a medicine glass that had gone round the ward without being cleansed.

Infection may be transferred by means of the ointment pot, and the nurse is warned against infecting the ointment after she has applied some to a patient's lips or nose, and is directed to throw the surplus away.

If the patient has ear discharge, the ear after being plugged with wool is securely bandaged, so that the patient cannot insert his finger and thus transfer infection to his nose or other ear.

The cleansing and disinfection of the patient's fingers and nails I consider of the utmost importance. Secondary rhinitis is probably often caused by infected finger-nails. It is a curious habit of scarlet-fever patients, which is not seen to the same extent in any other infectious disease, that they have an inveterate desire to "pick their noses." This may be due to some irritation of the nasal mucous membrane, septic matter being subsequently introduced by the fingers, or it may be due to commencing ulceration, the fingers subsequently becoming infected. Secondary rhinitis is frequently overlooked because there is not necessarily an associated rhinorrhœa, but a glance at patient's blood-stained forefingers is a sufficient indication of some rhinitis. Whatever is the sequence of events, the fingers in any case become infected, and ought to be thoroughly disinfected.

Toys are kept separate as far as possible, and all wind instruments are prohibited.

Before discharge, the patient has an izal bath, and the throat, ears and nose are carefully syringed. All the utensils used by him are then thoroughly sterilized before being used for a fresh patient. As to the date at which the patient is discharged, I pay no attention to the number of days he has been in the hospital. My aim is not to discharge him until he is free from all discharges and sores, and not until primary desquamation is almost completed. There is a tendency in some quarters now to pay no attention to desquamating skin, and to discharge the patient after four week's stay in hospital, the chief reason advanced in favour of this course being, that when patients have been discharged freely desquamating only a few "return" cases have occurred. That, of course, is no sufficient argument, at any rate to those who desire perfection in this matter. Though there has never been any proof that the scarlet fever organism can pass through the circulation and be given off by desquamating skin, there are undoubtedly other ways by which the skin becomes infected, as by the fingers, discharges, and so forth, and no one can pretend that a desquamating skin is as easy to disinfect as one in which this process has been completed. Late or recurrent desquamation of the feet may be safely disregarded, but the same cannot be said of the hands or other parts of the body liable to be infected. Even if desquamating skin is not *per se* infective, I do not think one can reasonably expect the average patient to be free from infection in twenty-eight days. Secondary cases not infrequently occur at the end of four weeks when patients are treated at home, showing that many are infective up to that date; and, to be on the safe side, a margin of ten days or a fortnight is necessary even if we accept four weeks as the average duration of infection.

When the wards become overcrowded, as not infrequently happens, I resort to formalin spraying, which is useful in clarifying the air and precipitating any floating microbes. The results obtained since the adoption of these aseptic methods have been most encouraging, and so far as "return" cases are concerned, contrast markedly with previous results. I include as "return" cases all those where a case has occurred within four weeks of the patient's return home. During the years 1900 and 1901, before the adoption of these methods, 281 cases were discharged, of which 14 gave rise to "return" cases, or 4·9 per cent. Since the adoption of these methods, 222 cases have been discharged in the years 1902, 1903 and 1904 (January to September), of which only one has given rise to a "return" case, or 0·4 per cent. It has been asserted that the number of home-return cases is not always the measure of the mischief wrought by "infecting" cases, and that the inmates of the home are the least likely to show signs of illness owing to their supposed immunity. Though the immunity conferred by one attack of scarlet fever is probably much exaggerated, there is some truth in this statement, but it applies with much greater force in the case of children treated at home. However, it is advisable to watch for probable "return cases" amongst children attending the same school or living in the same locality. I have occasionally observed groups of cases that gave rise to this suspicion, but in the case of the solitary "infecting" patient above mentioned, only one other case has since occurred in an urban population of over 5,000 inhabitants.

During the last 3½ years the benefit accruing to the individual families from removal of the patient to hospital, has been undoubted as regards the protection of the remaining susceptible children. For home-treated cases, of 123 susceptible children under 15 years of age remaining in the house, 20 subsequently became infected, equal to an attack rate of 16·2 per cent; for hospital cases, of 416 susceptible children under 15 years remaining, 32 subsequently developed the disease, equal to an attack rate of 7·7 per cent. The incidence of scarlet fever on susceptible children remaining in the house was thus, when the case was treated at home, more than double that when the case was removed to hospital.

Serious secondary complications have also been conspicuous by their absence. Such complications as acute nephritis and chronic rhinitis are now never met with. Slight secondary sore throats occurred in four instances, slight secondary rhinitis in two instances, and late otorrhœa in one instance, out of 222 cases. There has been no post-scarlatinal diphtheria. Six cases relapsed. These relapses were in some cases traced, with some degree of probability, to carelessness on the part of a nurse new to her duties. Overcrowding is generally held responsible for relapses, but the following incident shows that this is by no means always the case. Whenever a septic case is admitted to a pavilion there is danger of transference of infection, however much cubic space there may be. On Sept. 14th, 1903, there were only 2 cases of scarlet fever in a pavilion, one (*c*) convalescent, the other (*b*) in the 6th day of disease. These occupied separate rooms. Next day 5 cases were admitted, 3 of which were bad septic cases with profuse nasal and aural discharges. Of the 5, one (*a*), a girl, 7 years of age, had a mild, somewhat doubtful attack and was separated from the other four new arrivals, being placed in the same ward with the acute case (*b*). On Sept. 18th this girl's temperature, which had been 100° F. on the day of admission, rapidly rose to 104·8° F., and she commenced with all the symptoms of septic scarlet fever. On Sept. 23rd the other patient (*b*) in her ward, who was desquamating, developed a similar attack, and on Sept. 24th the convalescent (*c*) also relapsed, on the 37th day of his first attack. There was no overcrowding, the patients occupied three separate wards in the pavilion, and yet infection was transferred from the recent arrivals, probably through the medium of a nurse who neglected to take the precaution of cleansing her hands after attending to the septic cases.

Carelessness on the part of the nurses is, indeed, one of the greatest administrative difficulties to be contended with. In fever hospitals nurses are with difficulty taught the necessity of exercising care in small details. Their work is, from a nursing point of view, monotonous, and, unfortunately, fever hospitals are often situated in unnecessarily out-of-the-way spots, so that the retention of good nurses is almost impossible. Success, however, on the lines I have indicated depends almost entirely on the excellence of the nursing, and without efficient supervision the results are sure to be far from satisfactory.

If I may be allowed to draw any inference from this small experiment, I should say that the separation of acute from convalescent, and of simple from complicating cases, in entirely separate wards, ought always to be carried out where possible, but that no separation will be entirely successful unless the most strict precautions are taken to prevent the transference of infective material from one patient to another. I believe that with careful and intelligent nursing good results can be obtained even in badly constructed hospitals, and that in those hospitals where there is sufficient accommodation to permit of proper classification of the patients, the dangers of aggregation can and ought to be almost entirely eliminated.

DISCUSSION.

Dr. Cameron, of Leeds, advocated the careful disinfection of wards, and the emptying of wards at regular intervals.

Dr. Moore gave several illustrations of the occurrence of return cases as due to the concealment from disinfection of articles belonging to the primary case, such as picture books and clothing. He advocated the use of a saturated solution in alcohol of salicylic acid and glycerin for anointing the skin several days previous to discharge.

Dr. Stedman suggested that such articles as boots often escaped disinfection, and might be the means of causing secondary cases. He also referred to the occurrence of pneumonia as a result of overcrowded wards.

Dr. Housley called attention to the difficulties of diagnosis, and the introduction of other diseases into the hospital.

Dr. Martin was of opinion that all nurses should be properly trained, and that the probationer system was wrong.

Dr. Ewing referred to leucorrhœa as a cause of secondary cases, and gave several illustrations of a malignant case giving rise to simple scarlet fever and *vice versa*.

Dr. Neech pointed to the benefit of bandaging the nose and ears in case of discharge, so as to prevent the discharge drying on the linen and being disseminated throughout the ward.

Others engaged in the discussion, and then **Dr. Anderson** replied to numerous questions. He said he preferred the training of young women as nurses in one's own methods, and so he favoured the probationer system. The ratio of nurses should be 1 to every 5 patients, and he attempted to explain the variety in type of scarlet fever cases by the degree of virulence of the poison of the disease.

Loans to Local Authorities for Re-housing.—In reply to the letter of the Workmen's National Housing Council, forwarding the resolutions of the Essex Hall conference on December 3rd, the Chancellor of the Exchequer says that he cannot possibly alter the rates and conditions for loans made to local authorities by the Public Works Loans Commissioners at the present time. These conditions have been very recently revised, for reasons which were explained by Mr. Chamberlain in his Budget statement to the House of Commons. The circumstances to-day are substantially the same as those existing at the time when the revision took place, and as long as they remain unchanged it is impossible for him to support the issue of loans from the funds at the disposal of the Public Works Loans Board on terms more favourable to the borrowers. Mr. Chamberlain adds that he could not under any circumstances support a proposal to charge upon the taxpayers at large the cost of re-housing schemes adopted by local authorities, either in the shape of a grant in aid from the Exchequer or by the loan of money below the rate of interest at which it can be raised.

THE VALUE OF HOSPITALS FOR SCARLET FEVER.*

By W. G. WILLOUGHBY, M.D.,
Medical Officer of Health, Eastbourne.

It is notorious that hospitals for the isolation of cases of Scarlet Fever have recently received a very large amount of adverse criticism from various quarters, and the alleged objections to them have been so forcibly urged, that it is incumbent on every Medical Officer of Health to search out for himself whether in his particular district the hospital isolation of scarlet fever has proved useful or not, and if not, to study the reasons for the failure.

Large quantities of statistics have been compiled by those who feel that the isolation of scarlet fever in hospitals is either harmful or at least is not worth the expense, and having examined the figures of my own district (which show the contrary), I think the experience of what is probably the best town as regards scarlet fever isolation in the country, although it is but a small borough of about 45,000 inhabitants, may be of interest.

It is an elementary fact in statistics that the smaller the figures the less accurate the result is likely to be, and mine are so small that I only produce them for what they are worth, and do not pretend to make any general deductions from them; but an advantage of the experience of a small district, such as Eastbourne, is that the very smallness of the total number enables one to have a personal knowledge of the cases, including both those that stay at home and those that are removed to hospital.

I think I am quoting Dr. Newsholme in saying that although it is said that statistics can be made to prove anything, nothing can be proved without them, and therefore it is impossible to do without statistics. It seems to me, however, after studying the figures of other towns and of my own, that statistics in the instance of scarlet fever hospitals are most misleading, and are apt sometimes through unavoidable errors to prove too much.

In my enquiry I have found how impossible it is on this subject to get sufficiently accurate figures to build up tables warranting dogmatic conclusions, and I am also of opinion that the advantage or not of isolation of cases of scarlet fever in a fever hospital is really a subject for local enquiry rather than general, for some objectors certainly seem to prove their case to some extent; and that it is for each one managing such an institution, and for the Medical Officer of Health, if the two are not combined in one office, to judge whether his locality is benefiting or not by his particular hospital.

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* Read at a Meeting of the Southern Branch of the Incorporated Society of Medical Officers of Health, Portsmouth, January 18, 1905.

There is no question that these hospitals are expensive, and that their up-keep is also expensive; some of these hospitals have been built in a way that is unnecessarily expensive. In my own town the total cost to the ratepayers of the isolation hospitals (including disinfection) for the past five years has averaged £1576, which is equivalent to a rate of a little over 1d. in the pound, and I unhesitatingly say the ratepayers have excellent value for their money. In these remarks I omit any reference to the advantages any sick child derives from removal to proper nursing, diet, etc., from an unhealthy home, since I am dealing with hospitals for scarlet fever as they affect the community, rather than the individual.

The allegations against scarlet fever hospitals may be classified under three heads:—

1. That the hospital is useless as a means of preventing the occurrence of cases and fatal results from the same, *i.e.* that there has been no reduction of incidence and no reduction of scarlet fever death-rate from their use, even if the reverse is not the fact.

2. That the hospitals are dangerous in themselves to cases sent there, principally through the aggregation causing complications that might not occur elsewhere.

3. That the hospitals cause return cases. (This should be put "That return cases occur after discharge of cases from hospital.")

I propose to take these allegations *seriatim*.

First, with regard to the hospital being useless as to the prevention of cases. In this respect the figures obtained by Dr. Waddy, of Sheffield, and which at the Glasgow Meeting of the Congress of the Sanitary Institute, July, 1904, were backed up as being very accurate by the present and by the late Medical Officers of Sheffield, are most striking.

After carefully eliminating by statistical tables all the various causes which would in his opinion tend to explain away the figures, Dr. Waddy has come to the remarkable result in his statistics that, even taking into account all the untoward circumstances, the secondary incidence of scarlet fever has fallen worse on houses where patients have been removed to hospital, than where the patients were kept at home, and that hence the hospital is useless or worse than useless in respect of the occurrence of secondary cases; in fact, following the argument out to its logical conclusion, he has apparently proved by his figures that to keep a patient with scarlet fever in the house is safer for the remaining inmates of the house than to remove the primary case to hospital. This is what I mean by statistics proving too much. If the accuracy of the figures is accepted (and they were most carefully obtained) and if they are sufficient upon which to base deductions, it pays the Sheffield householder, if a case of scarlet fever occurs in his house, to keep the case at home, as thereby *ipso facto* secondary cases are less likely to occur. There is obviously a fallacy somewhere, notwithstanding Dr. Waddy's care; for it must be absurd to say that while all other things are equal there is less chance of a secondary case if the first is kept in the house, unless it is all chance. or scarlet fever is a non-infectious disease. The fallacy is, I think that one cannot possibly get sufficient data tabulated to eliminate chance of error.

I daresay in most places it will be found on examining the figures that there are as many, if not more, secondary cases occurring in houses where the first cases have been removed to hospital, than where the cases have been kept at home (I grant this, although in Eastbourne my experience is quite the reverse, the percentage of secondary cases to number of children exposed in hospital cases having been in 10 years 11·9 per cent, and in home cases 71·4 per cent). But statistics in this respect are most misleading from the fact that it is impossible fairly to compare the cases by such statistical tables. Amongst those classified as "kept at home," are doubtful cases, and cases which have been notified and are found not to be cases. Genuine cases which are kept at home are those in the houses of the rich and well-to-do, or where the child is the only child in the house. In fact, those not removed to hospital are just the cases from whence spread could scarcely come, for the above and other reasons.

I know attempts have been made to construct tables eliminating some of these items, but it is impossible to properly eliminate all, especially the doubtful cases and mistakes in diagnosis. In the last ten years the cases of scarlet fever in Eastbourne were 691, and 47 of these were not removed to hospital. Since 1900 I have personally investigated all cases of non-removal, *viz.* 17, and having a personal knowledge of them all I can give the reasons for non-removal, as follows:—

In 1900, two cases were not removed out of 51. One was a doubtful case which turned out to be German measles, and one was the delicate baby of very rich parents, and there was no other child in the house. How could secondary cases arise from these?

In the next year, out of 106 cases 5 were not removed. In one of the five cases the disease was said to be a second attack in a former patient, very doubtful I should say; the second case was that of an adult with no children in the house; the third case was that of an infant of 4 months; the fourth was an ordinary case; and the fifth case was notified in a late stage in a high-class house, where the rent would be at any rate over £200 a year, and the isolation accordingly good.

In 1902, out of 102 cases 7 were not removed. One of these was that of an invalid only child with no other child in the house, and this was followed by a secondary case in an adult after recovery of the first case; the second case was a doubtful case kept under observation at home; the third and fourth cases were those of two sisters who were brought from London suffering from the disease, and these caused one if not two other cases in other houses through the attendant, although they were isolated as carefully as possible in a house with no one but a nurse; the fifth was an ordinary case; the sixth was a case which, although notified, was noticed to be out and about perfectly well within four weeks, and was probably not a case; and the seventh was a child in the house of its own medical man, and accordingly under special arrangements for isolation. The fifth case, which was an ordinary case kept at home, caused indirectly the occurrence of three other cases.

In 1903, three cases of those notified were kept at home. One was in a house rented at over £100 a year, and the other two were in one family and were notified by one doctor, although two other doctors contradicted the diagnosis.

Of these 17 cases kept at home, one-fifth were not scarlet fever at all! How could statistics be built up on such a foundation? And this example of vagueness of home cases in a small town, where the individual cases are known to the Medical Officer, is probably but a sample of what takes place in other towns where it is not possible, owing to numbers, to have such personal knowledge of the cases, and where statistics are built up such as those of Sheffield. In the few instances where these home cases could cause secondary cases in the same houses, they generally did so, but as a rule it was not possible.

Now to take a converse example of the uselessness of these statistics. In one family in Eastbourne, in June last, six children on closely succeeding dates were removed to hospital. This according to similar statistics, would be included in the tables showing that the removal of the primary case to the hospital had failed to stop the spread of the disease in the family. But on careful investigation, later on, it was found that a child kept at home was the original cause of all these cases, and therefore the hospital did not and could not in such a case have a chance to do anything towards stopping the spread, and it was really an occasion of a home case causing 6 others. If the illness of the original child had not been suppressed by the parent when inquiries were made by the inspector, and the child had been removed to the hospital, in all probability four or five of the succeeding six cases would have been averted, for the original child was ill a fortnight before the first of the others were attacked.

Case after case of this sort, slightly varying in detail, can be found by personal investigation, and I contend therefore that figures showing the cases that occur in a house after a child has been removed or after a child has been kept at home, really cannot, owing to want of data, be used in any fairness to show whether the hospital is acting well or not.

The cases that are taken to hospital as a rule in large towns, or indeed anywhere, are those whose diagnosis is more certain, where there are many children in the family, where the people are poor, the houses more dilapidated, and where disinfection is likely to be the more incomplete from various difficulties, and where the people are not sufficiently educated to prevent them hiding away some of the patients' clothes to avoid disinfection, for fear of spoiling, in fact just where the opportunity and pabulum for secondary cases most exist.

In a table I had prepared showing the average number of children per house and the average rent in home cases as compared with those cases removed to the hospital, I was astonished to find that in one year, while the average number of children in the houses was 4·5 in the home cases, it was but 2·5 in the cases of children removed to the hospital, and yet in the home instances no secondary cases occurred. This in a way illustrates the uselessness of statistics for small figures, and the liability to error in large figures; for on ascertaining the actual facts I found there were only two cases kept at home that year, and one of these, although notified as scarlet fever, was not a case of scarlet fever at all, and the other was the infant child of rich parents (the father a M.P.) whose other children were grown up.

It might be said that if isolation hospitals for scarlet fever are of any use, and the cases at Eastbourne are so particularly well isolated, why do cases occur at all? Up to date this year 1904 (Sept.), 26 cases of scarlet fever have been notified in Eastbourne, of which one only was kept at home (I personally visited this case, and the medical attendant agreed with me that it was really not a case; if it had been, the parents would have consented to removal to hospital).

The causes of the remaining 25 cases in Eastbourne were as follows: Four cases were imported from London or the neighbourhood; seven cases occurred in one school on the probable introduction from outside; nine cases were traced to an unsuspected case at a crèche; one of the remaining five was an assistant at a place where visitors were constantly coming, and four were not traced.

There were therefore apparently only seven original cases in a population of 45,000 or more, during the first nine months of 1904. I have taken this instance simply because the facts are more recent.

It is impossible to have a great reduction of incidence while the intercourse between towns is so constant and so great. While there is only partial isolation in most places the system is not given a fair test, but it is fair to assume that by taking one's cases at once into hospital, one prevents their causing spread in other districts, and if isolation in hospitals were complete, then the incidence of the disease could be affected. The missing of the very mild cases would, however, always permit the occurrence of a certain number.

As regards the incidence of scarlet fever in Eastbourne, and the general number of children attacked: The average number of births in Eastbourne for the past ten years has been 917 annually, while the average mortality of infants has been 112 per 1,000 births. This leaves 805 children yearly, of which a few per annum would die just after infancy, leaving approximately 800 children annually who are liable to be attacked with scarlet fever.

The average number of cases of scarlet fever for the past ten years has been 69, which if all were local children, shows that 8½ per cent of the children are attacked with scarlet fever; but less really are attacked because some of the cases were in adults or visitors.

Thus at least 91½ per cent of the children of Eastbourne escape scarlet fever, which I am sure would not be the case were we not to take to hospital the cases which are thrust in on us from time to time. Owing to the large number of schools, there are very many extra children in Eastbourne of "scarlet fever age."

In 1903 the scarlet fever incidence for England and Wales was 1 in 427, in Eastbourne it was 1 in 1034. The death percentage of England and Wales for scarlet fever to cases notified was 3·4 per cent, for Eastbourne nil. 1903 has been taken because it is the last published year of the L.G.B. reports.

It is also said that there is no reduction of the death-rate from scarlet fever generally, and that the hospital is therefore useless; but this is not the experience of Eastbourne.

From 90 per cent to 100 per cent of the cases that occur in Eastbourne are isolated in the hospital, and there have been seven deaths from this disease in ten years, 1894–1903, while there have been notified 691 cases, a fatality of almost exactly 1 per cent. This is a small death-rate from a disease where serious complications are liable to occur. One of these seven deaths was that of a patient who was not removed to the hospital. As regards the other six deaths, one was admitted dying with another disease, one was ill with the effects of measles when admitted with scarlet fever, one died of whooping cough, two died of albuminuria and its accompanying complications, and one died from the intensity of the disease in the early stage.

Secondly, it is alleged that the hospital is dangerous to the case sent in, that the aggregation of cases leads to complications, and that the patient has a worse chance if sent to the hospital. This I consider to be a matter for local enquiry, and if any particular hospital is dangerous to the cases from aggregation, then it is time that the hospital is reformed; it is not a cause for condemning hospitals as a whole.

The experience again of Eastbourne, where one has a personal knowledge of the cases, is that of the 644 cases admitted in the ten years, six died, *i.e.* less than 1 per cent; of the 47 cases kept at home one died, *i.e.* just over 2 per cent, although the cases of mistaken diagnosis, doubtful and mild cases, and children of the well-to-do, are included among these 47 who were kept at home. I grant that these figures are too small on which to dogmatize, but in speaking of this subject generally I have been challenged to produce the figures.

As regards fatality, therefore, we have nothing for which to blame the hospital, but rather the reverse. A hospital mortality of less than 1 per cent for scarlet fever can be obtained, if the hospital is properly equipped and managed.

As regards complications, in the ten years during which 644 cases have passed through my hands, I have not seen a case of post-scarlatinal diphtheria; I have but on one occasion seen children suffer from another disease, and that was when five caught measles from a case that was sent in under a mistaken diagnosis; they all recovered, and were none the worse for the mishap; there have been but five cases of renal complications, and one of the fatal cases had an attack of renal disease before admission. I have had two bad cases of pleurisy and one of pericarditis in the 644 cases; I have had to open abscesses for three or four only, and have had to operate for abscess over the mastoid in one case; all these recovered, apparently none the worse for the trouble, with one exception, a patient who had permanent after-effects from abscess in the ankle joint.

If scarlet fever hospitals are, as has been alleged, not only no good, but even harmful, Eastbourne ought to suffer terribly because of its high percentage of removals, but I think I have shown that not only the incidence rate and the death-rate, but also the proportion of cases which have complications are very small. But even if in a hospital the complications and death-rates are worse than for cases outside, is it not natural?

The cases not admitted are the doubtful, the very mild, and the children of the rich, well nourished and well prepared to stand an illness.

On the other hand the cases admitted are those from poor, unhealthy, and often overcrowded houses; the children are ill nourished and not prepared to stand an illness. They have the actual complications on admission very frequently.

It would be unnatural in my opinion in a large city, if the scarlet fever hospital did not sometimes show a higher complication and death-rate, for the reason that the hospital gets the worst cases.

The third allegation against scarlet fever hospitals is that return cases are caused, and that the hospital is therefore harmful.

It is unfortunately true that, after eliminating cases where the return is but a coincidence, and after excluding instances such as the taking out of clothes that were not properly disinfected, etc., hospitals cause return cases. I am of opinion that return cases arise from two causes: firstly, error of management of discharge, and secondly persistence of infection in certain cases, which persistence would be the fact whether the patient went to the hospital or stayed at home.

As regards the Eastbourne Hospital and return cases, of the ten years under review, in five years there were no return cases; in fact, the cases occurred in batches, and particularly in the year 1901. In the ten years there have been altogether 31 cases which might be classed as return cases. Of these 12 occurred just about one period, *viz.* at the end of September and October, 1901, and caused considerable disquietude. The other cases had occurred at varying intervals during the five previous years, as follows: in 1896 four cases; in 1897 five; in 1898 two; in 1899 one; in 1900 two.

Although there have been 31 return cases, there have been only 22 real instances, for nine cases were secondary to the return cases.

After the last batch of 1901, although no special difference was made, a considerable commotion was set up concerning these cases and the slur it would bring on the hospital if this continued; it is a striking fact that there have been no return cases since, *i.e.* the last occurred in 1901.

This is not the time to go into the methods employed to prevent return cases, and beyond separating the convalescents and having a special scarlet fever discharge block and a steam disinfector on the spot, there are but few special means taken to prevent return cases, although we have not had any for three years; each individual, however, who is concerned with the disinfecting has been assured that his or her duty must be thoroughly performed.

On the whole question, although my own figures are so favourable to hospitals, I think that statistics must only supplement the actual experience of the Medical Officer in charge of the district. It is absolutely necessary for him to get out his statistics, but the more he attempts to do so the more hopeless he will find it to make a fair set of tables showing how hospitals affect the incidence, etc., of scarlet fever.

The great blot at present on hospitals is "return cases," and every effort should be made to stop the occurrence of these; but there is a limit to the stopping of these owing to long persistence in certain cases.

If a hospital is dangerous to cases, in that it gives rise to complications and has a very high death-rate, then it is time that that hospital is reorganized as to its accommodation, management, etc. But it must not be assumed, because a hospital has a higher death-rate for scarlet fever than the death-rate for those cases remaining outside, that the hospital itself is an evil. If the doubtful and the mild cases and the children of the well-to-do were admitted, and the cases under opposite conditions excluded, then you would soon make a very high death-rate outside, and a very low death-rate in hospital.

I do not submit my figures as those on which should be based any general deductions whatever, for two reasons: in the first place any available statistics anywhere on this subject cannot from their necessary imperfections give us accurate summaries of the facts, but if properly used can only lead us to their more complete examination; and secondly, my figures are of course too small. The cases and figures in Eastbourne, however, bear out what one knew from general experience, *viz.* that the hospital gets the worst, the complicated, and the undoubted cases, and therefore in a general way would be bound to suffer most; that in spite of this its cases do as well, if not better, than those outside; that where the primary cases were removed to the hospital, fewer secondary cases occurred; and that the total incidence of, and death-rate from, scarlet fever in Eastbourne, where isolation is so thoroughly carried out, is proportionately very small.

DISCUSSION.

Dr. Groves remembered when scarlet fever was of a virulent type, and thought that it was likely to take on such a type again, when it would be a more serious disease to deal with than it is now.

Dr. Lockhart Stephens looked upon all cases of scarlet fever as serious; and deprecated the use of the term "mild" for certain cases. He gave his experience in the treatment of cases, which originated some consideration of these points.

Dr. Lauder gave some account of his methods. The patients were only kept in bed for two days after the temperature was normal, and were discharged in four weeks or less. If there was any nasal discharge he operated under an anæsthetic and removed the adenoids or tonsils with uniformly good results.

Dr. **Fraser**, in discussing some of the points in Dr. Willoughby's paper, said he would first congratulate him on his courage in taking up the cudgels on behalf of the practice of the hospital isolation of scarlet fever, which apparently few Medical Officers of Health of large towns care to do. He had looked forward to his paper with considerable interest, and though he did not expect he would be able to present a very strong case in favour of the isolation hospital, he confessed he did not anticipate that he would give us such ample confirmation as he has done of the faults of the system.

Dr. Willoughby based his opinions on the facts as they have occurred in Eastbourne, yet he rather disarms criticism by acknowledging that the figures he has presented, and the town of Eastbourne, are too small to afford reliable data. With this the speaker agreed. Another point is that Eastbourne is a rich residential town, without a large population of poor, and without those large elementary schools which every Medical Officer of Health of a large town finds are the most potent agents in spreading scarlet fever. And if there is excessive freedom from scarlet fever in Eastbourne, one is more likely to be correct in attributing it not so much to the isolation hospital as to the well-to-do character of its inhabitants. But is Eastbourne really particularly free from scarlet fever, taking into consideration the character of the town and its residents ? It seemed to him that Dr. Willoughby's paper would have been more valuable if he could have given the scarlet fever attack-rates in one or two similar-sized towns to Eastbourne that have not adopted the isolation hospital. and could have shown that by comparison Eastbourne enjoyed a greater immunity from scarlet fever than these. This, however, he has not done, and there is nothing to indicate that the large isolation hospital expenditure mentioned has given Eastbourne any advantage over other towns in this respect.

One of the points made by opponents of isolation hospitals is that the errors of diagnosis in cases of scarlet fever frequently cause persons who have not got scarlet fever to be taken to hospital, where they naturally soon contract the disease. Dr. Fraser had not expected to find so much confirmation from Dr. Willoughby on this point, but he tells us that 6 out of 17, or 34 per cent, of the cases of scarlet fever treated at home had been wrongly diagnosed ; now if there has been the same percentage of error in Eastbourne in the cases admitted to hospital as amongst those treated at home, it will be seen that over 100 of the 644 cases sent to the Eastbourne Isolation Hospital had not really got scarlet fever at all ! Again, in dealing with return cases, Dr. Willoughby does not make out a very strong case for the isolation hospital. During ten years he has had 31 return cases caused by 22 discharges, or 5 per cent returns on his discharges, and in 1901 the return cases ran up to 12 per cent. This only substantiates his (the speaker's) contention that, no matter how good the management is, it is impossible to say when infection is over, and there is confirmation in Dr. Willoughby's own words : " Return cases depend on two causes—error in management of discharge ; and, secondly, *persistence of infection in certain cases.*" Exactly, persistence of infection in certain cases ; nobody knows how long it persists, but it is known to have persisted and caused a return case after eight months' detention in hospital. No opponent of the isolation hospital could expect to obtain greater confirmation of their views than is afforded by these two admissions of Dr. Willoughby.

We must certainly congratulate Dr. Willoughby on the very low death-rate from scarlet fever in his hospital ; a death-rate of 1 per cent, although it indicates a very mild type of the disease, indicates at the same time that the management of the hospital and the care and attention bestowed on the patients is of high order. Also, it must be most satisfactory to him to find that he has never had a case of post-scarlatinal diphtheria; unfortunately, in view of the fact that this disease undoubtedly occurs in from 2 to 3 per cent of the cases of the majority of hospitals in the kingdom, the fact of its absence in Eastbourne cannot convey much weight in supporting the practice of the hospital isolation of scarlet fever.

In conclusion, Dr. Willoughby's paper might be summarized as follows:—

We have in Eastbourne a specially-selected residential health resort, without a large poor population, with proportionately a very large staff of sanitary inspectors (1 per 11,000 population), with an expensive isolation hospital, with 90 per cent of the cases of scarlet fever isolated, and yet there are still seventy cases of scarlet fever per year. One word as to the expense. Dr. Willoughby has stated that the results of the isolation hospital are well worth the money expended on it. He tells us that the annual cost during the past ten years has been £1,576. Suppose half of this sum be taken as representing the cost of the scarlet fever patients, probably far too low an estimate, we find that scarlet fever, an exceptionally mild disease which he admits only has a case death-rate of only 2 per cent if treated at home, has cost the inhabitants of Eastbourne no less than £11 per case!

With reference to Dr. Groves' remarks that he could not support the doing away with isolation hospitals, because scarlet fever was a disease the virulence of which varied at different periods, and that although scarlet fever was mild now, a time might come when it will be very virulent again, I submit this has really nothing to do with the question under discussion. If isolation hospitals do not control *mild* scarlet fever there is no reason whatever why it should control scarlet fever when it develops a virulent form.

Dr. Willoughby, in reply, remarked that he was glad of Dr. Fraser's criticisms. He said that Eastbourne was not favourably placed as regards scarlet fever, there were so many schools for children of "scarlet fever age"; if his cases in hospital had any complications, it was as a rule because they had them on admission. Dr. Fraser was wrong in thinking that cases of wrong diagnosis got into the hospital: that was seldom the fact, because if the medical man notifying had a doubt he kept them out, and yet they were still called "scarlet fever," and of course secondary cases could hardly arise. Again and again, when cases of scarlet fever arose in Eastbourne, it was due to importations from places where isolation was not carried out, and therefore Eastbourne with its good isolation could not help that.

Carbon Dioxide alleged to be the Cause of Beri-beri.—Albert S. Ashmead, of New York, presents evidence in the *Sei-I-Kwai*, of Tokio, to show that the charcoal braziers, used all the year around in Japanese houses, are the cause of beri-beri. They generate carbon dioxide, which is the more injurious from the custom of sleeping on the floor. The Chinese have beri-beri when they burn charcoal, but when they burn other fuel there is no beri-beri. He regards ozonization as the proper treatment.

SOME PRACTICAL POINTS IN THE MANAGEMENT OF AN ISOLATION HOSPITAL.

By A. KNYVETT GORDON, B.A., M.B., B.C. Cantab.
Medical Superintendent of Monsall Hospital; Lecturer on Infectious Diseases in the University of Manchester.

I propose to-night to put before you, more as suggestion for discussion than as a dissertation, a few points which I have come to consider essential in the internal administration of a large fever hospital. As there is not time to-night to state the reasons which have led to these conclusions, the latter must of necessity appear somewhat dogmatic. For this semblance I must crave your indulgence.

The first point that I shall refer to is the importance of asepsis, or surgical cleanliness, and the methods by which one seeks to attain it.

Now, in an isolation hospital there are patients suffering from different infections: To Monsall, for instance, besides scarlet fever, enteric fever, and diphtheria, cases of puerperal fever, erysipelas, and tuberculosis are admitted, and it is obvious that these diseases must be separated from one another, and care must be taken to prevent cross infection; and it would not be too much to say that the extent to which superadded disease occurs in any hospital is in a large degree a measure of its efficiency.

But it is no less true that one patient is often infectious to another suffering ostensibly from the same disease. If, for instance, we examine the throats of half a dozen cases of scarlet fever in the same ward, it is seldom that we find the same assortment of organisms in any two of them. If one of these patients happen to have diphtheria bacilli in the fauces, and another patient contracts true diphtheria, we call it post-scarlatinal diphtheria, and we know it to be a superadded infection and a preventible one; but if a child comes in with a mild faucial affection, from which staphylococci only are grown on culture, and on the admission to the ward of another case with a more severe attack his throat becomes worse, and is then found to contain one or more varieties of streptococci also, we are wont to call this the natural course of events, or at most a "complication" of the disease, and we do not as a rule consider it in the light of a preventible occurrence. Yet I must confess that I see no difference in the etiology of the two infections.

It is necessary, then, that everybody in the hospital should understand that any one case may be infectious to any other, whether they are in the same ward or not; from this it arises that when any such infection occurs, rigid enquiry should be made to discover how it has arisen. Most of the complications of scarlet fever we know to be due to superadded infection, while we suspect this may be so in some others. How does infection occur? I think we may take it that the main factor with any disease is transmission of infective matter, either directly from an unrecognized case, or indirectly from infected dust, by hands, clothing, and instruments. To a much lesser extent there is transference by aërial convection within the ward; but I must confess that I am myself very sceptical as to the occurrence of this, at all events to the extent to which it is popularly supposed to happen. It is obviously such a very convenient harbour of refuge in which dirty hands may shelter themselves from the storm of an official enquiry.

I am doubtful, too, as to whether infection lingers much on the walls, tables, etc., in a ward, when they are clean to the naked eye. One would imagine from the writings of some, mostly architects I think, that the be-all and end-all of an isolation hospital was aseptic wards and furniture. Far be it from me to minimize the importance of these; but authorities have frequently spent large sums on the construction of a hospital, and have economized in the silliest way in intelligence or number of the staff. To my mind the staff are more potent factors for good or evil in dealing with infection, than any amount of glazed tiles and glass tables. Curiously enough, architects have frequently designed most modern hospitals with walls, ceilings, and tables all one could wish, and have constructed the floor, surely the most important part of all, if only because the infection ultimately gets there, of more or less porous wood, entailing infinite labour in wet sweeping to keep it free from dust, and in subsequent polishing to improve its appearance. I should personally prefer a floor made of terrazo, concrete, or some other impervious substance that could be flushed with water from a hose, and then dried with a rubber squeegee, so that no sweeping (either wet or dry) would ever be required.

I would then premise that the most important point is to eliminate what I will call staff infection; and by that I mean transference of infective matter by hands, instruments, and clothing of doctors or nurses, chiefly the latter, because their contact with the patient is more intimate and more prolonged. Let me then mention in some detail the precautions that I have come to consider advisable to attain that end. It is first necessary to try and diminish the extent to which infective matter is manufactured, and there can be no doubt that the most infectious things in a ward are the throats of the patients with scarlet fever and diphtheria, and the excreta of those with enteric fever.

I do not propose to-night to deal with the methods of treating excreta; that ground is well-trodden already, but I may state in passing that I regard izal as by far the best disinfectant for the purpose.

But I think it is a point of the first importance to render the throats of scarlet fever patients as innocuous as possible to their surroundings. With diphtheria, it is seldom safe, on account of the circulatory depression which the disease produces, to attempt any adequate disinfection of the throat. The method that I usually employ in the case of scarlet fever is to swab the fauces in all cases where there is much ulceration, especially if the odour of the breath is offensive, with undiluted izal. I have found that this drug has very little action on healthy mucous membrane, but that it attacks energetically dead and decomposing tissue. The mouth is held open with a gag, the fauces well exposed and dried, and then pure izal is deliberately applied to the ulcerated surfaces, any superfluous fluid being removed by a large wet swab. While I commenced by adopting this method solely with a view of curing the particular patient, I found subsequently that the treatment of the severe cases in this way was an advantage to the rest of the patients in the ward. Clinically the effect of this drug is often very well marked, and its selective action on necrotic tissue is of great value. As far as my experience goes, and it is now fairly extensive, I have not found this selective action to occur with other disinfectants.

The next point is to make sure that in the process of treatment, infective matter is not conveyed from one patient to another. Here there are two essentials: firstly, it is not safe to use any kind of syringe for the treatment of the throat, especially those made of india-rubber; secondly, the hands of the nurse must be sterile and must remain so.

At Monsall, a travelling dressing waggon is employed, which carries sufficient material for the cleansing of all the throats in the ward. The bone nozzles, one for each patient, are boiled and placed in a solution of boracic acid, and the swabs made of cotton wool are similarly treated. The nurse sterilizes her hands by scrubbing them with soft soap and water, followed by the use of turpentine and methylated spirit. She then puts on a pair of rubber gloves, which have been recently boiled—in practice, nozzles, swabs and gloves are all boiled together—and proceeds to the treatment of the first patient. When he has been attended to, the gloved hands are cleansed by holding them under the tap for a few minutes, followed by immersion in a solution of izal of the strength of 1 in 200 of water. By this means it is practically impossible for infection to be conveyed by the instruments or hands employed in the process of the throat treatment. The hands are, moreover, not rendered hard and chapped by frequent immersion in antiseptic solutions. I may say in passing that rubber gloves are worn by the nurses whenever they touch an enteric patient or any contaminated linen. Another essential point is that the nurses should wear their sleeves rolled up above the elbow whenever they are doing anything for a patient; the cuffs of a dress can both hold infective matter and transfer it from one patient to another. Similarly, the medical men while in the wards wear a washable suit of white drill; not, by the bye, a loose overall. Another important point is the treatment of discharging ears; when otorrhœa exists, the risk of a patient infecting his surroundings is enormously increased, as the pillow and bed-clothes become soaked with the discharge. Consequently all discharging ears are kept plugged with a loose wad of wool soaked in weak izal or other reliable antiseptic, and then covered with a pad of wool and a bandage. Providing that the plug is not too tight, and is frequently changed, the healing of the otitis is not delayed; irritation of the meatus is prevented by changing the antiseptic occasionally, and by keeping the parts well smeared with lanoline, or other ointment. If this method is adopted, cases which have diphtheria bacilli in the aural discharge can be safely treated in the ordinary ward. Where, however, they are present in the nasal discharge (without symptoms of true diphtheria) the patient is isolated.

I have said that superadded infection proceeds originally from an unrecognized case. It may be as well, then, briefly to mention the precautions that are taken at Monsall to ensure as far as possible a correct diagnosis.

The first point is that no case should be admitted to any ward unless one is certain from one's own actual observation that the patient is suffering from the disease certified. One cannot diagnose disease from the history, even when one sees oneself undoubted cases of the disease certified in other members of the family. In the case of scarlet fever especially, one has to remember that it is a mixed infection in practice, whatever it may be in theory, and that the assortment of organisms in any two cases is seldom the same. I believe that from a case of scarlet fever, other members of the family may catch either scarlet fever (of course the more common occurrence), or what we know as a septic throat, or some other streptococcal manifestation.

So cases are examined thoroughly in the ambulance before they are sent to a ward at all. It seems almost silly to mention this fact; but there are hospitals, I am sorry to say, where cases are sent without examination to the wards for the disease certified, and are examined there some hours later. This is, I submit, an absolutely unjustifiable practice. A minor point is that I do not personally like receiving rooms. My experience with them in the past has been that you may disinfect the room to any extent after the examination of a doubtful case; but you cannot get the nurse to apply an allied process to herself, especially when, as is often the case, she has been selected for that work because her days of usefulness in the ward are past. Here again, hands and clothing are the important factors.

If a patient comes in, then, who has not obvious positive signs of the certified disease, he is sent to a small isolation ward, and the medical man who certified him is written to in order that as full a history as possible may be obtained, and he is not sent to one of the general wards until some positive sign of the particular disease develops, and he is kept in until it is certain that he could not have had the disease in question; in practice a period of about three weeks usually suffices for this purpose.

A special point in connection with diagnosis is the elimination of post-scarlatinal diphtheria as far as possible, by extensive bacteriological examination of anything at all suspicious, in the hospital laboratory. Here, all patients that have bacilli morphologically indistinguishable from diphtheria bacilli are considered to be sources of infection, though they are not necessarily labelled cases of diphtheria clinically. In all probability the great majority of these bacilli are not diphtheria bacilli at all, but we cannot affirm this in any given case; it does not help us even to have the virulence determined, as this is so changeable a factor in the case of true diphtheria bacilli. Any bacillus may be saprophytic merely in one patient, and parasitic in another. As an administrative procedure, I am convinced that the isolation of these patients is a matter of vital importance, though I strongly object to their being labelled for statistical purposes as cases of true diphtheria.

It is, of course, essential that the walls, and floors, and furniture of the ward shall be kept clean by damp rubbing, not dusting. When a superadded infection has occurred to any patient in the ward, all the cups, feeding bottles, spoons, forks, and plates are boiled, and everything that cannot be boiled conveniently is scrubbed with strong izal solution. Incidentally, I cannot see why we should continue to employ carbolic acid and perchloride of mercury for gross disinfection when we have in izal such a much better germicide, and personally I only use them occasionally in the treatment of wounds, and in some operations.

It will be obvious from the foregoing remarks that bacteriological work must enter very largely into the routine of a modern fever hospital, and I need hardly point out that it is essential that the laboratory should be in the hospital itself, so that any investigation may be made at once. It is not possible to detect superadded infection in time for the result to be of any practical use, if the specimens are sent away to a laboratory outside.

At Monsall we have derived great advantage from the examination of fresh specimens, though the results are always checked by subsequent cultures. On the admission of a patient alleged to be suffering simply from scarlet fever, for instance, but whose throat looks suspicious, a smear specimen is made and examined before the patient is removed from the ambulance; it has repeatedly happened that we have been able to detect co-existent diphtheria in this manner, and the introduction of the patient to an uninfected ward has been prevented. Similarly, when in convalescence from scarlet fever a patient develops a sore throat, the immediate results obtained from the examination of a fresh specimen are often invaluable. Of course, in this connection, a negative result cannot be relied upon as showing the absence of any particular micro-organism.

At Monsall every nasal or aural discharge in a scarlet fever ward is examined bacteriologically when it arises, and subsequently at frequent intervals. Cultures are also made from the nose and ears when the patient is ready to go, even though the discharge may have stopped; and the examination of these cultures forms part of the routine investigation before the patient is considered fit to be sent home. I do not say free from infection, for I do not know when any patient who has had scarlet fever is free from infection. Another essential, in my opinion, in a fever hospital is an aseptic operating theatre. To operate in cases that are often septic to an extreme degree in an ordinary ward, is to court the spread of infection by the hands and clothing of those assisting. If the walls, floor, and fittings of the theatre are impervious, it is perfectly safe to take any patient into it without any risk of infecting the next case that goes there, and I have never found such infection occur. Moreover, there are many cases, especially of enteric fever and puerperal septicæmia, to say nothing of the surgical affections that are sometimes sent in erroneously as enteric fever, where a major operation is indicated, and this cannot be done with safety or the necessary rapidity, on a bed in the ward.

I have said that it is on the nursing staff that the extent to which surgical cleanliness is possible must mainly depend. To get the best results it is essential to engage young women and train them. That, again, is only possible when the hospital can give a certificate of training that is recognized by other authorities. When, as in the case in some large fever hospitals, the junior nurses are not engaged for any definite period, it is impossible to secure conscientious work.

Their work too should be immediately supervised by sisters who have had a good general training of at least three years' duration.

The actual training consists, in addition to this supervision by the sisters of the ward, in lectures on anatomy and physiology, and later, on the infectious diseases themselves, each course being followed by an examination. Small practical classes in practical ward work, preparation for operations, bandaging, etc., are also held throughout the year.

It is, furthermore, necessary that the work of any isolation hospital shall be supervised by a resident Medical Officer. When a hospital, even of thirty or forty beds, is worked by a non-resident and often busy medical man, even though he be the Medical Officer of Health, and is nursed by frivolous or unintelligent women, the attainment of asepsis is very difficult, even though the building be of the most modern description. It is always possible to get a good staff if the salaries paid be adequate; but, as I said before, sanitary authorities do not believe in paying for a staff: their work is not evident, and they cannot be shown off. Even with the best of staff, however, the work will be done badly at times unless there is some motive common to all, namely, a feeling of patriotism for the hospital; and that, again, is hardly possible unless the period of adhesion to the hospital is a fairly long one. The nurses stay because they are being trained, but the rest of the staff can only be expected to remain if the salaries paid are adequate. Otherwise, directly they learn anything, they will obtain better-paid posts elsewhere. It is essential for this feeling of patriotism, not only to train your staff, but to keep them, and above all, by constant teaching to make all grades feel that the work of each person matters—has a direct effect on the patient. When they have learnt this they have next to feel that every one in an isolation hospital is playing a distinct part in the prevention of disease, and is not merely curing a succession of individual patients.

But you will say there is nothing new in these methods: this is only ordinary asepsis, which is as old as the hills. That is so; it is all quite obvious, and has been so—in general hospitals—for some time.

What I do say, however, is that in isolation hospitals generally we are not sufficiently, I will even say efficiently, aseptic. Too often do sanitary authorities—leaving the vexed question of building out of the question for the moment, for I say frankly that I think they are of secondary, though yet of considerable importance—think that any kind of staff will do for a fever hospital, that infectious diseases can be treated, as they are tabulated, in bulk; in fact, that the hospital has served its purpose when it has removed the disease from the community.

In very truth this is not so. They are bound not only to isolate disease, but to treat it. To secure asepsis in a general hospital is difficult enough, but in an atmosphere of virulent infection the difficulty is increased tenfold. The field of work as yet untouched is enormous. We are only on the threshold in the pathology of scarlet and enteric fevers. What record of our work, moreover, have we given to the medical profession for the advancement of learning? Time after time one sees good work, often very good work, done from morn till night and the world no better for it. We have barely time to observe, and none at all to record. We have only to turn to America to see what things might become. There the fever hospitals are on a footing with the general hospitals. Each has a crowd of willing workers, mostly unpaid by the bye, for they take the work as part of their training, and everything is not only investigated, but recorded. What we want is that young, recently-qualified men shall come to us and work in numbers at the isolation hospitals, but we must first show that we have something to give them.

THE new Public Health Laboratory in connection with the University of Manchester was opened on January 27th. Congratulatory addresses were delivered by Earl Spencer (the Chancellor), Mr. W. J. Crossley, Sir William Church, and others. The laboratories are particularly good, and owe their inception to Professor Delépine, who is to be congratulated on the result of his labours.

TO ENHANCE RESISTING POWER TO INFECTION.—H. Miyake's experiments to increase resistance to infectious processes have been numerous. His final conclusion (*Mittheilungen a. d. Grenzgebieten*, Jena, xiii. 4 and 5) is to the effect that subcutaneous injection of nucleic acid has a remarkable effect in summoning the leucocytes to the spot, and reducing the danger from operative intervention. The dose for an adult is 50 cc. of a 2 per cent neutralized solution of yeast nucleinic acid. The ·5 per cent solution is preferable, but as this requires 200 cc. of fluid, the more concentrated solution is generally used. No bad secondary effects were noticed in the 38 cases in which Mikulicz had used it at date of writing.

THE ESTIMATION OF CARBON MONOXIDE.—M. Albert Levy and M. Pécoul have devised a test which will show the presence of carbon-monoxide in the proportion of 1 part in 100,000 parts of air. The method is as follows: The suspected air is passed over per-iodic acid contained in a U tube kept at a temperature of 80° C. The carbon-monoxide if present decomposes the per-iodic acid, setting free iodine; they then pass the air and the iodine through chloroform, which takes up the latter. The amount of iodine is estimated by a colorimeter scale, and from the amount of iodine the quantity of carbon-monoxide is deduced. The method is absolutely accurate, and no other element present in the atmosphere will reduce per-iodic acid. By its aid the atmosphere in the neighbourhood of a suspected stove can easily be examined in plenty of time for the necessary precautions to be taken.

THE INFLUENCE OF HOSPITAL ISOLATION ON SCARLET FEVER IN HEREFORD.*

By J. B. FITZSIMONS, M.D.,
Late Medical Officer, Hereford Isolation Hospital.

As you are aware, there has been carried on during the past few years a somewhat desultory controversy upon the influence of hospital isolation on scarlet fever, and when I was asked to read a paper at this meeting, it appeared to me that inasmuch as most statistics have been, up to this time, taken from the records of large towns, containing congested areas, it might be of interest, in the first place to see how hospital isolation has worked out in a small, openly built town like Hereford, the centre of an agricultural district; and secondly, to enquire if any subject for consideration, bearing reference to the Hereford Isolation Hospital, arises from the discussion, in so far as it has already proceeded.

As many of the papers on the subject of hospital isolation have been, in recent years, read before this Society, and published in the Society's journal, you are doubtless well acquainted with them, and probably have noted that in some cases the same statistics, looked at from different points of view, appear to lead to diametrically opposite conclusions, and one is led to speculate as to the value of the conclusions derivable solely from such statistics.

I can give you an instance of the possibility of drawing different conclusions from the same figures, examined *per se*, taken from the scarlet fever records of the city of Hereford: of course pigmy statistics in comparison with those drawn from the large towns, but interesting in themselves, as showing what different conclusions might be derived from such records, looked at from varying standpoints, and also interesting as to their bearing upon the question of hospital isolation in a small town. The figures themselves I extract from the scarlet fever statistics of Hereford, compiled by Dr. Cecil Moore, the Medical Officer of Health for the city, and published in his very valuable report for 1903.

Looking therefore at Dr. Moore's scarlet fever statistics, we note first that the Hereford Isolation Hospital, an iron hospital lined with wood and having felt between, was opened on May 18th, 1893. Taking then the total results of the ten pre-hospital years, and comparing them with the results of the ten succeeding hospital years, we obtain the following tables, premising that during the first seven of the ten pre-hospital years, notification, although existing, was voluntary, and therefore it is probable that the attack rate was higher than the figures denote :—

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* Read before the West of England and South Wales Branch of the Incorporated Society of Medical Officers of Health.

	Percentage of Notifications of children under 5 years of age to all ages above.	Attack rate per 1000 of population.	Mortality per 1000 of population.	Percentage of case mortality.	Percentage of cases isolated in Hospital.
Average of ten pre-hospital years	38·1	1·44	·06	4·1	0
Average of ten hospital years	41·9	3·81	·13	3·4	50·3

These figures, looked at in this way, would *appear* to indicate that the attack rate, column 2, and mortality per 1000 of population, column 3, and the percentage of notifications of children under five years of age to all ages above, column 1, had been considerably increased, and the percentage of case mortality, column 4, very little reduced, by the establishment of an isolation hospital in Hereford, and the isolation of half the cases occurring, column 5. But if we divide the second ten-year period into two periods of *five* years each, we get the very different results shown in the following table, to which I have added two more columns ;—column 1, giving the percentage of children under five years of age to the total population, taken in 1891 and 1901 ; and column 5, showing the mortality per 1000 of children under five years of age, taken by themselves.

1		2	3	4	5	6	7
Percentage of children under 5 years of age to total population.		Percentage of Notifications of children under 5 years of age to all ages above.	Attack rate per 1000 of populat.on.	Mortality per 1000 of population.	Mortality per 1000 of children under 5 years of age, taken by themselves.	Percentage of case mortality.	Percentage of cases isolated in Hospi al.
In 1891 11·0	Average of first five hospital years ...	45·58	5·81	·24	1·7	4·1	32·8
In 1901 10·3	Average of second five hospital years ...	30·4	1·81	·016	0·0	1·01	67·8

From this table you will see that in the first five hospital years, column 7, 32·8 per cent of the cases occurring in Hereford were isolated. In the second five hospital years, no less than 67·8 per cent were isolated ; and then, looking at the various columns, we see that in the first of these hospital periods, column 3, the attack rate was 5·81 per 1000 of the population; in the second, it had fallen to 1·81. The mortality per 1000 of the population, column 4, which was ·24 in the first period, fell to ·016 in the second; the percentage of case mortality, column 6, fell from 4·1 to 1·01; the mortality per 1000 of children under five years of age, taken by themselves, column 5, fell from 1·7 to 0; and the percentage of notifications of children under five years of age to all ages above, column 2, fell from 45·58 to 30·4.

Such happy results, occurring when the percentage of cases isolated was more than doubled, would appear to be confirmatory of the value of hospital isolation, as carried out in the smaller towns; the only adverse point being that the attack rate per 1000 of the population, column 3, which in the second hospital period of five years had fallen to 1·81, was not even then as low as during the pre-hospital period, Table I, column 2, when it stood at 1·44; but as I said before, during seven of the ten pre-hospital years notifications were not compulsory, and had they been so, the attack rate would probably have been much higher.

But in considering the value of hospital isolation, if we desire to arrive at reliable conclusions, my own opinion is that much more should be taken into consideration than mere figures. For instance, as regards the Hereford statistics, it should be borne in mind that during the three years following the opening of the isolation hospital, there was an epidemic wave of scarlet fever, there having been, as shown by Dr. Moore's table, no less than 466 notifications in the first three years after the opening of the hospital, since which period there has been a gradual decline in the incidence of the disease, until last year, 1903, there were only 24 cases notified.

We must also remember that the majority of cases of scarlet fever treated at home, are those in less crowded or larger houses, where there is a spare room, or rooms, and where home isolation is possible, whilst cases removed to hospital are mostly taken from small homes, often crowded with inmates, where there is no spare room, and no possibility of isolation. In such cases the hospital may fairly be termed the poor man's spare room, and when we meet with such cases, occurring in crowded homes, with no possibility of isolation, we cannot help wondering what the result might have been, had such hospital accommodation not been available.

One can quite understand that if the hospital accommodation be *too small* for the number of cases admitted during, perhaps, a period of epidemic, and that overcrowding of cases ensues, the results as regards fatality might compare unfavourably with results of cases treated in homes of a somewhat better class, where, as I have said, isolation can be fairly carried out. And it seems hardly fair to quote the results of hospital isolation in towns where the hospital is always crowded, and where cases have to be kept at home until there is a vacant bed, and to omit statistics taken from small towns like Hereford, which have, in proportion to the population, much more sufficient hospital accommodation, where there is in consequence no overcrowding, and where the hospital wards, from time to time, as opportunity occurs, can be closed and thoroughly cleansed and disinfected. Under such conditions the results would naturally be more favourable. And I think you will probably agree that statistics must be obtained, extending over a much larger area, including country towns as well as the more densely populated cities, and, together with such records, you must be fully in possession of the surrounding circumstances, and varying conditions, of the different centres, before you can arrive at any decision adverse to the present system of hospital isolation.

I have referred to the statistics of Hereford as pigmy statistics, but in the year 1876 they certainly could not have been so termed. Unfortunately, of that year, no statistics are available except the number of deaths, and we can only guess at the probable number of cases from the number of deaths. In that year in Hereford there were 75 deaths, giving a mortality of 3·90 per 1000 of the population, and I can easily imagine that the attack rate must have been correspondingly high.

Then secondly, I proposed to enquire if any subject of interest, bearing reference to the Hereford Isolation Hospital, arises from the consideration of the various papers which have been written on the subject of hospital isolation. One point occurs to me, as to the length of time convalescents should be retained in hospital prior to discharge.

Dr. Foord Caiger, in Clifford Allbutt's *System of Medicine*, says: "The period of quarantine should not be less than six weeks." But from an editorial published in the *Journal of State Medicine*, in March, 1903, I gather that the period of detention in the hospitals of the Metropolitan Asylums Board is nine weeks, and that it varies in different hospitals throughout the country, from that lengthened period down to about four or five weeks at Leicester. In Hereford our custom in the majority of cases, where nothing occurs to contra-indicate it, has been to discharge the patient after six weeks detention, and this, I think, is the safest period, as judged by results, that is, as judged by the number of return cases.

In 1899 the Metropolitan Asylums Board, in whose hospitals, as I have said, the patients appear to be detained nine weeks, requested Dr. W. J. Simpson to make an investigation into all return cases of scarlet fever connected with their infectious hospitals, from October 1898 to March 1899; the return cases, before investigation, giving a percentage of 3·8. And on inquiry, after deducting all *doubtful* cases, and all cases in which "no evidence was furnished of their being return cases," and also, "all cases in which it was impossible to dissociate infected clothing, or house infection, from personal infection," he found there still remained, as admittedly true return cases, a percentage of 1·3. Amongst the other conclusions Dr. Simpson arrived at from his investigations, as given in his report, was the following: "That mere duration of detention in hospital is no standard as to the limit of infection, and no guarantee that the patient shall be freed of infection; and that long detention in infectious wards will not reduce the percentage of return cases." And further on he adds, "that a reduction in the duration of the detention of scarlet fever and diphtheria cases in hospital, would likely tend to a greater control over the prevalence of scarlet fever and diphtheria in the metropolis, as it would permit of a larger number being removed to hospital with the same accommodation as at present." Dr. Simpson's report was subsequently referred to the Royal College of Physicians, who decided that there was not sufficient evidence at present before them, to enable them to lay down any definite period of time, as necessary for the detention of patients recovering from scarlet fever. In Hereford, where as I have said we discharge the majority of patients in six weeks, the return cases, since the establishment of the hospital, give a percentage of only ·62. This favourable result leads us to speculate, not only whether it might not be wiser to reduce the period of detention, especially in the crowded hospitals of the larger towns, thereby rendering the wards less crowded, and by so much more healthy for the remaining inmates, but also as to whether the argument that patients would do better at home, based on statistics drawn from towns where the hospitals are overcrowded, should not rather be considered as an argument for the expenditure of a further amount of public money, so as to render the accommodation of such hospitals equal to the needs of the surrounding communities.

PRIZES FOR CLEANLINESS.—The Public Health Committee of Belfast has adopted a somewhat novel scheme of offering prizes to occupiers of small houses the rent of which does not exceed 4s. weekly. The prizes consist of allowances to cover the rent for specified periods (the first prize being one year's rent), and these will be awarded to the competitors who keep their houses, yards, and premises, including furniture, utensils, and windows, cleanest and in the most sanitary condition between certain given dates. The author of the scheme is Mr. Robert Meyer, Chief Clerk of the Corporation.

THE SUFFICIENCY OF ISOLATION HOSPITALS.*

By HENRY HANDFORD, M.D., F.R.C.P., D.P.H.,
Medical Officer of Health, County of Nottingham.

More is being expected, both by the medical profession and the public, than the present buildings and the present administration are fitted to accomplish. In the early sixties, when hospitals for infectious diseases were few and far between, much was written on hospitalism and the evil effects of aggregation in general hospitals. The result has been a steady and continuous improvement in the structure and arrangements of general hospitals, especially in regard to floor space and cubic space per patient, and in the impermeability of floors, walls, and ceilings. Hospital-generated diseases have practically disappeared. For infectious diseases more air space is required, and a structure that can be more readily and thoroughly disinfected. But how often is this found? The Local Government Board require, in hospitals built out of borrowed money, 2,000 cubic feet † of air space and 144 square feet of floor space per patient, in contrast with a practice of 1,000 to 1,500 cubic feet, and 100 to 140 square feet per patient in general hospitals. But how many infectious hospitals have 2,000 cubic feet per patient? or, if they were originally designed to allow that amount, in how many have further beds been added, as convenience required, and the cubic space per patient been reduced?

It should be remembered that the requirements of the Local Government Board form the *minimum limit* of what is considered necessary; whereas in practice they have been accepted as a standard, or even as a maximum limit.

The value of hospital isolation in scarlet fever has been much debated, and very different opinions have been expressed. But in how many hospitals have the methods of classification and isolation of patients, and the frequent disinfection of buildings so well described by Dr. Lauder,‡ of Southampton, been carried out?

These would seem to be the very least that can be expected to give the best results at present attainable. He writes: "The new methods are due to a firm belief, based on observation, that more classification and more segregation are essential; and, moreover, that 'return' cases are attributable not to the peeling condition, as is generally contended, but mainly to undetected discharges from the respiratory passages and ears in those who have left the hospital." The following is a brief account of the methods adopted in our hospital:—

"The cases are brought to the hospital from only one house at a time. On arrival each patient is examined before removal from the ambulance by the resident medical officer, and a swab is taken from the throat for bacteriological examination. Doubtful cases are put into an observation ward, and detained or sent home according to whether scarlet fever is found to be present or absent, the ward being disinfected immediately after their removal. Undoubted cases of scarlet fever are put into an 'acute room,' and kept there until the acute stage of the disease has passed, and a bacteriological examination of the swab has excluded diphtheria. They are then removed into the general ward, where the recent cases are kept apart from those that are convalescent. These precautions are taken even with the mildest cases. If at any time aural or nasal discharges, enlarged tonsils, glands, etc., develop, the patient is removed from the general ward to a pavilion or block reserved for such complications. At the end of the third week of the disease, if free from complications, the patients are transferred from the general ward to another pavilion which has been thoroughly disinfected, and to which no cases are admitted except through the out-bathing station, with the same precautions as if they were being discharged from hospital. They are kept in this pavilion apart from all other patients for one week, the nose, ears, and throat being carefully douched with a disinfectant each evening after bathing. At the end of the week—that is, the end of the fourth week of the disease—they are discharged from hospital after again passing through the out-bathing station, no matter what the condition with regard to the peeling may be. After their discharge no patients are admitted into the same pavilion until it has been thoroughly disinfected. The general wards are thoroughly disinfected at least once a month, or as indicated by the condition of the patients. These methods have not only comparatively freed us from the occurrence of albuminuria, enlarged glands, discharges from the nose and ears, etc., in the patients, but have reduced the duration of fever and the period during which they had to be kept in bed, and left us during the year without a single case of post-scarlatinal diphtheria or relapse. Further benefit would, I believe, result from the complete and continued separation of each individual case."

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* From Annual Report.

† In calculating the cubic space, any height above 18 ft. should be disregarded.

‡ *Lancet*, March 12, 1904, p. 712.

The percentage of "return" cases after the old system was 4·27, and after that above described 2·15. The average stay in hospital was in the former case 48 days, in the latter 34.

Milroy Lectures.—Dr. W. H. Hamer has been appointed to deliver the Milroy Lectures on State Medicine and Public Hygiene for 1906; the lectures for this year will be delivered by Dr. T. M. Legge, on "Industrial Anthrax," on March 7th, 9th, and 14th.

Recommendations as to Measles.—The first fasciculus of Dr. Newsholme's Annual Report for 1904 deals entirely with the subject of measles in Brighton. Summarized, the conclusions comprise the following:—

Measles, as affecting school attendance, is almost confined to infant schools.

All, or nearly all, the deaths from measles occur at ages under six.

About 12 per cent of the children in invaded houses escape attack, although they have not previously had measles.

Ordinary domestic cleansing suffices for disinfection after measles.

Home isolation of the patient is generally impracticable, though isolation of the infected household from other households could be enforced if early information of cases of measles were received.

A certain proportion of cases of measles should be treated in the Sanatorium.

There is no necessity to exclude children who have already had measles from attendance at boys' and girls' schools.

It is very desirable to exclude children under five, and still more under four years of age, from attendance at school. By this means a large number of children's lives could be saved, both as regards measles and other communicable diseases.

It is recommended that the Education Committee should be asked to pass the proposed regulations printed in the appendix, respecting notification of cases of measles, etc., by teachers and attendance officers.

LAW REPORTS.

HIGH COURT OF JUSTICE.

KING'S BENCH DIVISION.

December, 1904, and *January* 11*th*, 12*th and* 24*th*, 1905.

BEFORE WALTON, J.

FOSTER *v.* THE WARBLINGTON URBAN DISTRICT COUNCIL.

Nuisance—Sewage Pollution—Oyster Beds—Injunction—Prescriptive right.

A local authority cannot gain by prescription a right to create a public nuisance nor a right to discharge sewage so as to contaminate oysters in private oyster beds, because such an act is a criminal offence under the Sea Fisheries Act, 1868. *A local authority so doing are liable to pay damages for the injuries caused, but an injunction will not necessarily be granted to restrain them.*

This was an action brought by the owner of the principal oyster business at Emsworth, near Chichester, claiming an injunction to restrain the defendants from placing or maintaining their sewer outfalls in the neighbourhood of his oyster storage beds on the foreshore of Emsworth Creek, and from delivering sewage on to the said foreshore in the neighbourhood of his said beds, so as to contaminate the same and to render the oysters therein liable to become infected and unsafe for human food, and to cause a nuisance to the plaintiff. The plaintiff further claimed damages for loss and injury to his business caused by the alleged nuisance. It was from these beds that oysters were supplied for a banquet which was held at Winchester in November, 1902, after which several persons present were taken ill with typhoid fever, some of whom died. An inquiry was held by the Local Government Board, and the conclusion arrived at was that the deaths were attributable to the consumption of oysters from Emsworth, which were not free from sewage matter. As a result, the plaintiff's trade was ruined, and he was unable to make use of his oyster beds at Emsworth.

The defendants denied the plaintiff's title to the oyster beds, and much of the trial was taken up with the proof of his title. The defendants also said they had a prescriptive right to discharge the sewage on to the foreshore, and they further said that the plaintiff was himself a member of the defendant council, and drained crude sewage and trade refuse into the tidal waters at Emsworth Creek, and also drained slaughter-house refuse into the sewers of the defendant council, which thence passed into the tidal waters, and that as a member of the said council the plaintiff was a party to the resolutions of the said council in connection with all matters relating to the sewage of the defendants' district.

Macmorran, K.C., *William Wills*, and *J. G. Pease* appeared for the plaintiff; *Lawson Walton, K.C.*, and *G. F. Hohler* for the defendants.

The plaintiff stated in evidence that he had been a shipbuilder, shipowner, and shellfish merchant at Emsworth since 1878. In that year he purchased the goodwill of an oyster business there and the rights in the foreshore beds. Subsequently he purchased other beds, which, together with those bought in 1878, he had enlarged and improved. He built 11 fishing smacks, 4 ketches, and 3 sailing cutters. At the time of the scare in 1902 his vessels represented £17,000 or £18,000. The vessels were sent to dredge for oysters, and procured them from Whitstable, Cornwall, France, Holland, and America. Witness sold between two and three million oysters a year. The beds at Emsworth had advantages greater than those of any other place in England. They were close to the foreshore, which enabled the oysters to be easily gathered, close to the railway station, and were free from frost. Until Dr. Bulstrode made his report witness had no suspicion that his beds were contaminated. Before 1896 there was a main sewer constructed by Ford with an outlet near the beds. There was also a drain running between the oyster beds, but not discharging into the beds. In 1897 witness became a member of the defendant council, and made complaints about the sewage, suggesting the construction of purification works. In November, 1902, he supplied oysters for the banquet at Winchester. After the inquiry held by the Local Government Board his business fell off, and in December all the oysters, to the number of half a million, were removed to Hayling. Since that time he had been unable to use the beds at Emsworth. Since the scare he had only used four boats. He knew that Ford's sewer was originally closed by a penstock, but since 1895 there was nothing to prevent the sewage from coming out at all times.

The drainage of the town was in a very bad state, and he had, as a councillor, to assent to one or two proposals, although they were detrimental to his oyster beds. The slaughter-house of which complaints were made belonged to his mother, and the changes in its drainage were carried out under his brother's supervision.

A considerable body of evidence was called as to the effect of recent reforms in the drainage in increasing the discharge of sewage near the oyster beds and as to the effect of sewage in rendering oysters unwholesome.

Dr. Bulstrode, Inspector of the Medical Department of the Local Government Board, said that in 1894-5 he inquired into the condition of the oyster beds of the country, and reported thereon. In his opinion the Emsworth oyster beds were then liable to pollution. After the outbreak of typhoid fever following the banquet at Winchester, in 1902, he made another enquiry, and reported that the oysters then eaten came from Emsworth, and that the balance of evidence was strongly in favour of the view that they caused the outbreak. He did not think there was evidence that oyster beds were deliberately placed near sewage for the purpose of fattening the oysters, but they were placed near towns for purposes of accessibility and convenience. On several occasions before the Winchester outbreak he had told Mr. Foster that his beds were liable to pollution, but Mr. Foster did not seem fully to appreciate the danger. After the outbreak he told Mr. Foster's brother that it would be a crime to continue to sell oysters from those beds.

Evidence was also given by Dr. Klein that oysters and water taken from the pit from which the Winchester oysters were supplied were analysed, with the result that every one of eighteen oysters examined was found to contain organisms usually present in sewage, and three were found to contain organisms associated with acute gastro-enteritis. The water was contaminated with sewage and noxious germs. The oyster imbibed the surrounding water, and retained in its body any solid contained in it. Liquid sewage was more dangerous than solid sewage, and the construction of catch-pits (which had been made in this case) to intercept solid sewage would have very little effect in lessening danger.

A large amount of evidence was called on behalf of the defendants as to the history and nature of the local drainage, the improvements effected by the defendants, the lessening of danger to the oyster beds alleged to have resulted therefrom, and the dates at which the beds were constructed.

WALTON, J., in delivering judgment, said he had come to the conclusion that the plaintiff had a good title to the soil of these beds. He used them to store oysters for sale; and there is no doubt that they were contaminated by sewage deposited by the defendants' sewerage, the matter coming to a crisis when typhoid arose after a banquet at Winchester in 1902, at which the plaintiff's oysters were supplied. In his opinion the plaintiff's oysters had been unfit for sale for some time, they had been rendered unfit by the defendants' sewerage, and will be so as long as the discharge goes on. The question, then, is whether the defendants are liable for this. The plaintiff rests his claim, in the first place, on the ground that he possesses a right of several fishery, belonging originally to the lord of the manor. After examining the documents on which the claim was based, his Lordship had come to the conclusion that the lord of the manor had not only the ownership of the soil of the fishery, but also the right of several fishery as a right belonging to him as owner of the soil. From this it followed that, by acquiring rights in the soil of the foreshore, the plaintiff had acquired the right of several fishery, and the oyster beds were private oyster beds. These rights have, in fact, been disturbed by the deposit of sewage matter by the defendants. Are they liable therefor? They were constituted in November, 1894; and he held that they took over all the rights, duties, obligations and liabilities of their predecessors, the local rural sanitary authority. The sewer was made about 1872 by that authority. There were then very few closets or cesspools in connexion with it, and the amount of sewage then, and for some time after, was inconsiderable. The defendants continued the sewer, and added to the amount of sewerage. Cases had been cited to show that a local authority is not liable for merely continuing what had been taken over from predecessors; but these cases were not, in his opinion, applicable. The defendants had, in fact, carried the sewerage and discharged it so as to contaminate the plaintiff's oyster beds; and, unless they had some other defence, he thought they were liable. It was said that they had a prescriptive right to discharge the sewage; but were they only exercising a right acquired by prescription? There was very little evidence of such use of the sewer in 1882—twenty-two years before this action was brought—as would have caused the damage, which really arose from the modern practice of connecting drains with the sewers. During the last ten years the amount of drainage discharged has very largely increased. Moreover, as originally laid, it was intended that the contamination of the foreshore by the sewer should to some extent be prevented by the use of a penstock at the outlet, which prevented any discharge at low water, the sewerage being carried out to sea and being practically innocuous. The penstock was discontinued in 1892, and the risk of contamination largely increased. The user has changed so much in character that it can scarcely be said that the old user has continued, and therefore the defendants cannot plead any prescriptive right in answer to this action. Moreover, could any such right be acquired by prescription? If it was a public nuisance to a public fishery it could not be so acquired. Here there was no public nuisance in the sense that what was done was directly injurious to the public health. But it is difficult, since the passing of the Sea Fisheries Act, 1868 (see especially sections 51 and 53), to establish a right of discharging sewage so as to contaminate oysters in private oyster beds. It was made criminal to do so, and there can be no prescription to commit a criminal act. In his opinion this was a private oyster bed within the meaning of the Act. This practically disposes of the case; but the claim was put on another ground—that even if this was a public fishery, the plaintiff is still entitled as owner of the soil to recover in respect of his right of public fishery as carried on by him. He thought the plaintiff would be entitled to succeed on this ground. No one can acquire by prescription a right to pollute a public fishery. With regard to the alleged acquiescence of the plaintiff, he thought it was not made out. He would not grant an injunction on the grounds stated in the similar case of THE EARL OF HARRINGTON *v.* THE MAYOR, ETC., OF DERBY (17 *Public Health*, p. 324), but there would be judgment for the plaintiff for damages, the amount of which had been, by consent, reserved for further consideration.

January 25th, 1905.

BEFORE LORD ALVERSTONE, L.C.J., KENNEDY AND RIDLEY, JJ.

NATHAN *v.* ROUSE.

Public Health (London) Act, 1891, Section 120—Nuisance from drain—Cost of remedying—Right to recover part from persons using drain.

The occupier of premises through which ran a drain which conveyed the sewage of his own and adjoining houses was compelled by the Sanitary Authority to abate a nuisance arising from this drain, the nuisance being wholly on his own premises. He claimed a proportionate part of the cost from the occupier of one of the adjoining houses, but it was held that Section 120 *of the Public Health* (*London*) *Act*, 1891, *did not entitle him to recover.*

This was an appeal by the plaintiff from the judgment of the Shoreditch County Court in an action by the occupier of a house to recover from an adjoining occupier a proportionate part of the cost of abating a nuisance under Section 120 of the Public Health (London) Act, 1891. The plaintiff was compelled by proceedings taken by the Sanitary Authority to abate a nuisance caused by the escape of sewage on the plaintiff's premises from a drain which received sewage from three adjoining houses, the middle one being in the occupation of the plaintiff. The plaintiff did the necessary repairs to the drain on his own premises, and brought this action to recover a contribution under the above section. The Judge found that the whole of the money sought to be recovered was for work done on the plaintiff's premises, that there was no evidence to show that the defendant was liable to repair or make good the drain running from the defendant's house under the plaintiff's, and it therefore seemed to him that it was the plaintiff by whose act and default the drain allowed sewage to escape and hence caused a nuisance, and that the nuisance was not caused by any act or default of the defendant, and he accordingly gave judgment for the defendant. Section 120 of the Act provides that, where a nuisance is caused by the acts or defaults of two or more persons, the Sanitary Authority may proceed against any one, and that where some only of the persons by whose act or default any nuisance has been caused have been proceeded against, they may recover from the others a proportionate part of the cost of the proceedings and of abating the nuisance. It was contended for the plaintiff that, as the defendant sent sewage from his premises into the pipe, he was liable to contribute.

Macmorran, K.C., and *J. W. Moyses* appeared for the plaintiff; *R. Cunningham Glen* for the defendant. The appeal was dismissed.

The LORD CHIEF JUSTICE, in giving judgment, said it must be taken for the purpose of this case that the defendant had a right to discharge his sewage through the pipe. The evidence was that sewage from the defendant's premises passed through a drain under the plaintiff's premises. Did that fact entitle the plaintiff to contribution under Section 120? Though possibly the defendant might have a right to go in and repair the drain, it could not be said that there was any duty upon him to do so. There appeared to be no statute making the defendant a person by whose act or default the nuisance was caused. The object of Section 120 was very different. There was first the case of a number of persons occupying the drain or sewer complained of, and very likely there was a liability upon each of them to contribute to the cost of repairing it. There was also the case of a drain, the whole of which caused the nuisance, running through more than one property, where it might be necessary to apportion the occupiers' obligations. There was, however, great difficulty in seeing how the apportionment was to be made, unless it had some relation to the property on which the cost was incurred. There would be no other possible method of apportioning the cost. He only mentioned that because it seemed to him to indicate that the Section was dealing with apportionment between people who were under an obligation to prevent the nuisance. In this case the nuisance was caused by non-repair of the drain on the plaintiff's premises. There was no evidence of any obligation on the part of the defendant to repair the drain, and he could not come to the conclusion that the Judge was wrong in holding that there was no act or default of the defendant causing the nuisance.

KENNEDY and RIDLEY, JJ., concurred.

February 1st, 1905.

BAYLEY *v.* COOK.

Sale of Food and Drugs Acts—Milk—Analyst's Certificate—Standard of comparison.

The analyst's certificate in the case of proceedings under Section 6 of the Sale of Food and Drugs Act, 1875, should show that the sample has been compared with some standard, but it will be sufficient if the standard of calculation can be gathered from the certificate.

This was a case stated by the justices of Andover on an information laid by the appellant Bayley, an inspector under the Sale of Food and Drugs Act, 1875, Section 6, against the respondent Cook, for wilfully selling to the appellant, to his prejudice, milk not of the nature, substance, and quality demanded, being deficient in milk-fat to the extent of 53 per cent. It was objected on behalf of the respondent that the analyst's certificate was defective owing to its not stating the standard upon which it was based. The material parts of the certificate were as follows: "I am of opinion that the sample contained the parts as under: Milk-fat, 1·4 per cent; milk solids other than milk-fat, 5·6 per cent. Observations.—This milk is deficient in milk solids other than milk-fat to the extent of 2·9 per cent., which is equivalent to the addition of 34·2 per cent of water. It is also deficient in milk-fat to the extent of 53·4 per cent of the milk-fat." The justices dismissed the summons on the ground that the certificate was bad.

C. A. Russell, K.C., and *W. J. H. Brodrick* appeared for the appellant. The respondent was not represented and did not appear. It was contended that the certificate should be read in conjunction with Rule 1 of the Sale of Milk Regulations, 1901, made by the Local Government Board, under Section 4 of the Sale of Food and Drugs Act, 1899. The court allowed the appeal and remitted the case to the justices.

The **Lord Chief Justice** said that he did not wish it to be thought that the provisions of the Act of 1899 in any way lessened the obligation upon the analyst as to what he was bound to state in the certificate by Section 18 of the Sale of Food and Drugs Act, 1875. If nothing more appeared than "milk-fat, 1·4 per cent," he doubted whether that would be a sufficient certificate. It was necessary to show that the sample had been compared with some standard, and he gathered that that was what misled the justices, for they seemed to have thought that the basis on which the certificate was framed was not sufficient. It would have been more correct to state in the certificate what the proper quantity of milk-fat was; but, as a little examination would show, it did appear from the certificate, and it did correctly show how much milk-fat was deficient, and the standard of calculation could be gathered from the certificate itself, and therefore the objection to it was not a good one.

Mr. Justice Kennedy, in agreeing, said that it was important that the accused should know without elaborate calculations what he was accused of, and he hoped that those who gave certificates would err, if at all, on the side of fullness and simplicity.

Mr. Justice Ridley agreed.

Adulteration of Milk—Warranty.—At the West London Police Court, on January 5th, 1905, the Great Western and Metropolitan Dairies, Limited, appeared to answer a summons issued by the Fulham Borough Council for giving a false warranty in respect of a consignment of milk.

Mr. Humphreys supported the summons; *Mr. Ricketts, jun.*, defended.

On October 9th three churns of milk were consigned by the defendant company to Dunkley & Son, dairymen, and, a sample having been taken subsequently in the street by the Council's inspector, the milk was found to contain 0·1265 per cent of crystallized boric acid, or 88 grains per gallon. The retailers, Dunkley & Son, were summoned, and were acquitted on producing a warranty from the defendant company. Mr. Ricketts now produced a written warranty dated March 24th, 1904, given by the farmer to the company, and argued that the company were hereby protected. The company were merely receivers and distributors of milk sent by farmers. By the case of ELLIOTT *v.* PILCHER it was decided that a retailer was protected by a running warranty; there was no necessity for proof of specific warranty with each consignment. Moreover, as the present proceedings were not taken within six months of the sale of the milk, the summons must fail. Mr. Rose.—The warranty is dated March, and the sale took place in October. Mr. Ricketts.—My argument is that the sale took place at the time of the signing of the warranty—in March—and that the delivery only took place in October. Mr. Rose.—Can you say that the property in milk from some future cow passes to the retailer from the moment of the signing of the contract? Mr. Ricketts.—That seems to be the law. Evidence was given by Mr. Thompsett, Secretary of the company, to the effect that they distributed 140,000 gallons of milk a week, and spent several hundreds of pounds a year in having the milk analysed; no boric acid was ever put into the milk. The magistrate said that the legal point raised was an important one; and he adjourned the summons for consideration.

On February 1st the magistrate overruled the legal point raised for the defence, holding that a warranty dated March could not refer to milk delivered in October; but he was of opinion that the defendant company had no reason to believe the milk had been tampered with, and he therefore dismissed the summons.

Adulteration of Brandy.—At Bow Street Police Court, on January 31st, before Sir A. de Rutzen, Mrs. Marion Ross was summoned for selling brandy deficient in esters to the extent of 41 per cent.

Mr. Ricketts prosecuted for the Holborn Borough Council; *Mr. Hayne* defended.

Mr. Ricketts said that it had been held that brandy must be the product of the grape, the introduction of any other constituent being to the prejudice of the purchaser. On December 19th an Inspector under the Sale of Food and Drugs Act visited the defendant's house and purchased a pint of brandy for 3s. 4d. Afterwards, when he made known the object of his visit, the barmaid said that there was a notice about brandy in the next bar. It read, "All spirits sold at this establishment are of the same superior quality as heretofore, but are not guaranteed to be solely extracted from the grape." The notice was not visible from the bar where he made the purchase. The barmaid also showed him a small gummed slip, similar to the notice, which, she said, was usually affixed to the bottles containing brandy. Mr. James Kear Colwell, public analyst for Holborn, gave evidence in support of the summons. In cross-examination he said that the standard which had been fixed by analysts for brandy was 80 parts by weight of esters per 100,000 parts in volume. The finest brandy sometimes contained as much as 160 parts of esters; if brandy of that quality were mixed with 50 per cent of plain spirit he would be bound to call the mixture brandy, because it would contain more than 80 parts of esters. The standard for brandy had not been approved by the Board of Agriculture. Mr. Hayne, for the defence, contended that Section 6 of the Sale of Food and Drugs Act, under which these proceedings were taken, contemplated a mixture of ingredients to the prejudice of the purchaser, but in this case there had been no mixture and no abstraction. He submitted that no offence had been committed. The defendant on oath said she had two notices about brandy in her house, and they could be seen from all parts of the bars. The magistrate did not believe the notice could have been seen from the bar where the Inspector made his purchase, and he fined the defendant 40s. and £2 2s. costs.

At the West London, on January 31st, before Mr. Rose, J. H. Squires was summoned for selling at the George Hotel, Fulham, a sample of brandy with 55 per cent of the spirit not derived from the grape, and at the Red Lion Hotel brandy with 70 per cent of the spirit not derived from the grape. Mr. Courthope Monroe, barrister, prosecuted, and Mr. Oswald Hanson, the solicitor to the local Licensed Victuallers' Protection Society, defended.

The Scottish case of Wilson *v.* Wilson (Adams' Justiciary Reports, vol. iv. p. 310) and Webb *v.* Knight, 2 Q.B.D. 530, were cited. The magistrate thought that this latter case was the guiding case on the point. The question was "What would a man reasonably expect to get when he asked for brandy?"

Mr. W. Pheysey, buyer and manager in the wine department of the Army and Navy Co-operative Stores, called as a witness, stated that in his opinion brandy was a product of the distillation of wine from the grape—distilled in a pot still, or an apparatus analogous to the pot still. It was since the ravages of phylloxera in the French wine districts that the importation of the grain-spirit brandy dated. A common form of new brandy derived from the wine can be got for 5s. a gallon. Spirit derived from the grain now stood at 1s. 4d. a gallon and could be bought for 8¾d. a gallon. The French Government issued two Excise certificates—white and red—the former relating to pure brandy and the latter to the spirit mixture, so that importers could give a proper guarantee to the retailer.

He had tested the sample of brandy in this case, and did not consider it brandy. In cross-examination the witness said that they sold brandy at the stores at 3s. 1d. a bottle. Mr. Hanson.—Is that pure brandy? The witness.—Yes; I can tell it by the taste. Mr. Hanson.—Do you seriously mean to say you can tell grape spirit from grain spirit by the taste? The witness.—Yes. Mr. Hanson (producing a small bottle containing a dark liquid).—Will you please test this? The witness did so, and observed, "There is a certain amount of brandy there." Mr. Hanson.—Is it what you would call brandy? The witness.—Yes. Mr. Hanson.—Well, that is the sample left us by the inspector, and which the prosecution declare is not brandy. In answer to further questions the witness admitted that there was no standard of brandy, and that the French Commission would not set up a standard. At a meeting of public analysts on the 11th of this month a similar decision was arrived at. Mr. E. J. Turner, of Turner & Co., Mark Lane, E.C., agents for Jameson & Co. and George Sayer & Co., brandy shippers, stated that in his opinion brandy was spirit derived from the grape by pot distillation. In answer to Mr. Hanson, he admitted that his firm sold a liquor which was not made of the pure spirit. They termed it foreign brandy. They always informed their customers that it was not pure brandy. Several other trade experts who were called for the defence sampled the brandy in Court and pronounced it to be brandy. In answer to the magistrate Mr. Hanson said the price was 5s. 3d. a bottle; Martell's "Three Star" brandy was 6s. 6d. Mr. Rose came to the conclusion that the purchaser obtained a liquid of the nature, substance, and quality asked for, and if the brandy was inferior so much the worse for the purchaser. He was largely guided by the case of WEBB v. KNIGHT, which was decided in 1877. He dismissed the summons, with five guineas costs against the Council.

EXCESS OF SULPHUR IN COAL GAS.—At Greenwich, the South Suburban Gas Company, of Lower Sydenham, was summoned by the Lewisham Borough Council for supplying gas of less purity than it ought to be—namely, containing over 14·92 grains of sulphur; also for failing to abate a nuisance from a chimney on the north side of Southend Lane.

Templer Down appeared for the Council, and *Horace Avory, K.C.*, for the defence.

Mr. Down asked the magistrate to impose the full penalty, on the ground that the company had deliberately offended, having abandoned the process of extracting sulphur from the gas. There were, he believed, three processes for the extraction of sulphur, namely, the lime process, which the company had abandoned, oxide of iron, and, he believed, ammonia. He argued that the lime process had been a nuisance to the neighbourhood by reason of the way in which it was carried out by the company. Mr. Alfred Howard, gas examiner, having proved the test, which was not disputed, Mr. Avory said that the company had abandoned the lime process to avoid a nuisance. Thus the excess of sulphur was unavoidable. No forfeiture was required where the excess was unavoidable or where it amounted to not more than 10 per cent on any one day. Sir George Livesey, Chairman of the defendant company, in evidence said that there was no known process, except lime, for extracting sulphur from gas. Experiments with oxide of iron and with ammonia had failed. Wherever the lime was deposited it caused a nuisance. It also affected the eyes of the men employed. He did not say it was injurious to health. In fact children were brought to inhale the fumes for the cure of whooping-cough. The company supplied five other municipal boroughs, but only Lewisham had taken proceedings.

At the adjourned hearing, Mr. Down contended that the cause was not unavoidable, and called Mr. W. J. A. Butterfield, an expert witness, formerly chemist at Beckton Gas Works, who said that the nuisance caused by the use of lime ought to be very slight. The magistrate remarked that between a prosecution for a nuisance caused by the use of lime in 1902 and July, 1904, when the use of lime was abandoned, the Company had not been summoned. The witness said there were four alternative processes for extracting sulphur, namely, the use of lime in purifying, the use of lime with the coal, the use of ammoniacal liquor, and selection of coal. After other evidence, Mr. Baggallay, in giving judgment, said that the company would have a defence if there were only one mode of extracting sulphur, *viz.* by using lime. In his opinion, however, they had failed to prove this, and it had been shown that there were other modes besides using lime to avoid a nuisance. They had failed to prove an unavoidable cause. There would be a fine of £10 and 25 guineas costs.

THE RESULTS OF THE CUBICLE SYSTEM OF TREATING INFECTIOUS DISEASE.

At the hospital connected with the Paris Pasteur Institute, all kinds of contagious diseases are received and taken care of in the same pavilion. About 2,745 patients have thus been sheltered since 1900, including 524 cases of small-pox, 443 of diphtheria, 163 of erysipelas, 136 of measles, 7 of declared hydrophobia, and 192 mothers of sick children or the children of sick mothers. During this entire time there has been contagion of others only in 8 instances: 5 of small-pox, 2 of erysipelas, and 1 of diphtheria. The mortality has been 18 per cent in small-pox, 11 per cent in diphtheria, 2·17 per cent in scarlet fever, and 6·75 per cent in erysipelas. The hospital is on the cell or box plan, each separate chamber containing but one or two beds at most, with an entrance on the central corridor, and also on a large piazza to be used when it is desirable to shut off the chamber from the rest of the building. There are six "boxes" on each side of the corridor. The walls between them are of glass. Each "box" is cemented and can be washed with the hose. Each has its independent supply of hot and cold water, electric light, and gas, and when it is desirable to isolate the nurse with the patient two cells can be thrown into one. Each patient entering the hospital is vaccinated, if there are any cases of small-pox in the hospital, and each child receives a preventive injection of 5 cc. of antidiphtheria serum, if there is any diphtheria. The dishes, linen, etc., used for each chamber can be disinfected on the spot, and none are ever taken out of the pavilion. Every morning, and usually evenings too, the floor is wiped up with a cloth wet with 1 to 50 javel water or a 1 to 200 solution of cresyline. Twice a week the floor of the entire hospital is washed with water and black soap. The erysipelas infection was traced to a rubber comb imperfectly sterilized with sublimate. Since then metal combs have been used, and boiled. The cases of contagion of small-pox all developed after an incubation, showing that they must have become infected the first day or possibly before entering the hospital. The case of diphtheria was contracted from some doll's clothes brought from outside to a child.—*Bulletin de la Société Méd. des Hôpitaux de Paris.*

STATISTICS FOR 1904.

In the table of statistics published in the January number of *Public Health* the death rate from Measles for the Borough of Hastings was stated to be 0·15, it should have been 0·015 per 1,000 persons living. The Enteritis mortality (infantile) in the Borough of Preston was 1·5 per 1,000 births. The following figures arrived too late to be included in the list :—

	Rochdale.	Leyton.	Brighton.	Burnley.	Sheffield.
Recorded Death Rate ...	16·1	—	16·5	20·9	16·82
Corrected Death Rate ...	17·7	18·1	16·3	20·0	18·14
Birth Rate	22·8	30·7	28·5	27·25	31·99
Deaths under 1 year, per 1,000 births	15·2	138	133	232·77	159
Diarrhœa Mortality ,, ,,	17·9	*58	18·2	68·5	45
Enteritis Mortality ,, ,,	6·1	—	10·1	14·9	†8
Death Rate per 1,000 persons living, from :—					
Small-pox	0·012	—	—	—	0·002
Measles	0·49	0·24	0·74	1·01	0·07
Scarlet Fever	0·16	0·05	0·016	0·012	0·20
Diphtheria	0·21	0·18	0·18	0·020	0·12
Whooping Cough	0·42	0·42	0·28	0·048	0·35
Enteric Fever	0·08	0·09	0·06	0·019	0·12
Phthisis	—	1·20	1·36	1·51	1·24

* Includes "Enteritis." † Includes "Gastro-Enteritis."

Two men recently attempted to force their way into the Small-pox Hospital at Manchester, in order to see one of the patients. It is reported that they were intoxicated. The Atherstone Rural District Council propose to prosecute one of them. Attempts had been made to smuggle beer and tobacco to some of the patients.

Death of Dr. S. W. Abbott.—We regret to record the death of Samuel W. Abbott, M.D., for eighteen years the Secretary of the Massachusetts State Board of Health. Dr. Abbott was sixty-seven years of age. The reports issued by him have always been looked upon as most valuable in this country, containing as they did the results of careful and exhaustive experiments on the numerous practical subjects which engage the attention of all health authorities. The experiments on water filtration may be taken as a sample of the good work done under his direction. Dr. Abbott is succeeded by Dr. Charles Harrington.

Aids to the Diagnosis of Tuberculosis.—Marzagalli announced at the 14th Italian Congress of Internal Medicine, Oct. 1904, that 2 drops of blood serum added to 8 drops of a filtered emulsion of tubercle bacilli will give the precipitation reaction in case of tuberculosis. He prepares the emulsion by triturating in the presence of distilled water the tubercle bacilli previously rinsed with cold water. M. I. Holmgren's experience of the diazo-reaction in the prognosis of tuberculosis is (*Semaine Médicale*, xxiv. 44) that when the reaction was intense, the subject succumbed within two months. When it was less marked or dubious, the subject lived six to eighteen months, and a negative reaction was always followed by long survival.

PROCEEDINGS OF THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTITUTED, 1881. INCORPORATED, 1891.

A GENERAL MEETING of the Incorporated Society of Medical Officers of Health was held at No. 9, Adelphi Terrace, Strand, London, W.C., on Friday, 10th February, 1905. Present: Drs. J. F. J. Sykes, President (in the chair), Sir Shirley F. Murphy, Wm. Butler, J. A. H. Brincker, Herbert Jones, A. W. J. MacFadden, Edward Rayment, Philip Boobbyer, Sidney Davies, F. J. Allan, J. F. Sandilands, G. F. McCleary, J. T. C. Nash, E. H. Snell, J. Tubb-Thomas, Frank Robinson, W. H. Symons, W. A. Bond, W. Arnold Evans, E. F. Willoughby, and M. Wolf Defries, B.A. Amongst the visitors were the following: Drs. J. G. Flowerdew Lawson, of Edinburgh, K. Lutoslawski of Warsaw, F. Lawson Dodd, G. S. Buchanan, Robert Hertz of Paris, Mrs. Alice Hertz, Mrs. D. Hood, Miss B. Gardiner, Mrs. R. E. Durrie Redford, Messrs. E. Renaud, J. Nugent Harris, Sec. of the Agricultural Organization Society, Jas. Sadler, Sec. of the Cheshire Milk Producers Association, Cox, C. G. Moor, C. Hebble, H. Stevens, C. MacFadden, etc.

Minutes.—The Minutes of the previous General Meeting held on 6th January, 1905, having been printed and published in PUBLIC HEALTH were taken as read, with the addition (by the Hon. Sec.) to the Report to the Council, "That they have instructed the Hon. Sec. to report as to the actual cost and details and payments of railway and other expenses of members of the Society," and were approved unanimously and duly signed by the chairman.

CORRESPONDENCE.

The Hon. Sec. read the following letter (dated 22nd Nov., 1904), from Sir Shirley F. Murphy:—

> "DEAR MR. JONES,—Will you oblige me by conveying to the Society of Medical Officers of Health my sincere thanks to them for the kind resolution expressing their gratification at the distinction proposed to be conferred upon me. I regard this honour as intended to show appreciation of the work in which we are all engaged, and it is in this connection that it has its chief value to me.
>
> "I am, dear Mr. Jones,
> "Yours sincerely,
> SHIRLEY F. MURPHY.

On the motion of Dr. Butler, seconded by Dr. MacFadden, it was resolved unanimously that the letter be recorded in the minutes of the Society.

The Hon. Sec. read letters regretting inability to attend the meeting from the Earl of Crewe and Prof. Kenwood.

ELECTIONS.

The following gentlemen were duly nominated and balloted for, and the President declared them to be unanimously elected:—

AS FELLOWS.

Brown, Robert Burdett, L.R.C.P., L.R.C.S., Hail Gate, Howden, East Yorks, M.O.H. Howden, R.D.

Hibbert, Joseph Coote, M.D., D.P.H., City Hospital for Infectious Diseases, Newcastle-upon-Tyne, Assistant M.O.H. Newcastle-upon-Tyne, C.B.

Montgomery, W. M., M.B., D.P.H., Johannesburg, M.O.H. Eastern Transvaal.

Stewart, W. J. J., M.D., D.P.H., Isolation Hospital, Willesden, Assistant M.O.H. Willesden, U.D.

As an Associate.

Gavin, F. C., M.R.C.V.S., Municipal Offices, Johannesburg.

Hygienic Supervision of Schools.

The President called attention to the urgent necessity of taking some action in connection with the hygienic supervision of schools, and on the motion of Dr. Butler, seconded by Dr. MacFadden, the bye-laws were unanimously suspended. On the motion of the President, seconded by Dr. MacFadden, and after discussion, it was unanimously resolved as a matter of urgency:—

> "That the question of the hygienic supervision of schools be referred to the Council of the Incorporated Society of Medical Officers of Health, to consider and report upon with a view to making pressing representations to the Council of the Royal Sanitary Institute, the Board of Education, and the Local Government Board."

It was also resolved on the motion of Dr. Willoughby, seconded by Dr. Boobbyer:—

> "That the question of the power of entry into schools for the purpose of testing drains be made a part of the reference to the Council of the Society."

Dr. McCleary then read a paper on "The Reform of the Milk Supply."

Metropolitan Branch.—An ordinary meeting of the Branch was held at No. 9, Adelphi Terrace, Strand, W.C., on Friday, January 27th, 1905. Present: Drs. Roberts (President), Sykes, Allan, P. C. Smith, Kerr, Frank Robinson, C. T. Thomas, McCleary, Collingridge, Millson, Field, R. Dudfield, Bryett, A. W. Harris, and Priestley (Hon. Sec.).

Election of Auditors.—Drs. McCleary and Brown were elected auditors for the year 1904–5.

Shop Hours Act.—It was resolved "that, where the Shop Hours Act of 1904 is put into force, any officers appointed under such Act should be connected with the Public Health Departments of the various Sanitary Authorities concerned, under the supervision, and instructions, of the Medical Officers of Health."

Vote of money to Mr. Kent.—It was resolved "to vote a sum of five guineas to Mr. Kent for services rendered as late Clerk to the Branch."

London County Council General Powers Bill, 1905.—After careful consideration, it was *resolved* "to oppose before Parliament, and to draw up and file a petition (against the Bill) for such a purpose, the L.C.C. General Powers Bill, 1905, in so far as Parts V. VI. and VII. are concerned, including sections 22–35 (inclusive), should the L.C.C. not previously adopt, and incorporate in their Bill, the alterations and amendments suggested by the Branch."

Revenue Act, 1903.—The following *minimum* requirements were approved by the Branch, which recommends that any certificate to be given by the Medical Officer of Health, under Section 11 of the Revenue Act, 1903, should be, consequently, based thereon:—

a. That a definite minimum height for living and sleeping rooms is provided, as defined by the London Building Act, 1894, together with a definite minimum area (superficial) of 96 feet for each of such rooms.

b. That a fireplace and chimney-flue are provided for each living and sleeping room.

c. That every living or sleeping room is sufficiently lighted by daylight, and properly ventilated.

d. That each dwelling is so arranged as to be through-ventilated.

e. That each dwelling is provided with a properly ventilated food cupboard (or recess) or larder, properly protected against flies and effluvia; and also a proper range or stove for cooking purposes.

f. That there is a proper and sufficient supply of water available on each floor.

g. That there is, at least, one w.c. properly supplied with water for every twelve occupants (or less), on each floor—each w.c. being disconnected aërially from any dwelling in the interior of the building.

h. That on each floor a sufficient space, or open lobby, is provided, accessible to, and for the use of, the families on each floor, for the deposit of refuse, etc.

i. That every common staircase is permanently ventilated at each floor level, or by through ventilation, so as to break the common air connection.

j. That corridors, or lobbies, within the building, whether external or internal to the dwellings, are all properly ventilated, and sufficiently lighted as far as practicable.

k. That every internal court, open at the top and surrounded on all sides and situated wholly, or in part, within the building, is ventilated by a permanent opening, or openings, to the external air at the lower end—such opening, or openings, being of an area at least equal to 1-20th the internal area of the court.

l. That the drainage of the premises is in accordance with the Regulations and Bye-laws recognised by the Authority, within whose jurisdiction the premises are situated.

m. That accommodation for clothes-washing is provided, sufficient for the number of persons inhabiting the house.

N.B.—In no case should a Medical Officer of Health examine a house (with separate dwellings), with a view to granting a certificate as to the accommodation and sanitary condition, as required under Section 11 of the Revenue Act, 1903, until he is satisfied, as advised by the Local Government Board, that the house in question comes within the Section of the Act.

It was also resolved:

"That a representation be made to the Local Government Board, urging that it is desirable that the plans of a new building intended to be constructed for occupation in separate dwellings, at rentals within the limits of Section 11 of the Revenue Act, 1903, should be submitted to the Medical Officer of Health before the building is erected, in order to avoid subjecting the Owner to the risk of a refusal of a certificate by waiting until after the completion of the building."

North-Western Branch.—A meeting of the Branch was held at the Chemical Club, Victoria Hotel, Manchester, on Friday, January 20th. Present: Dr. J. B. Wilkinson, President (in the chair), Drs. Brindley, Buchan, Greenwood, Wheatley, Sergeant, Garstang, Peck, Laird, Dearden, and M. Young.

Adulteration of Pearl Barley.—The President drew attention to the adulteration of pearl barley by coating it with talc, and invited an expression of opinion from the Members as to the advisability of taking proceedings or otherwise in cases of this description.

Dr. E. Sergeant in commenting upon the matter stated that if barley water were prepared in the only proper manner from such barley, no great harm would in his opinion result, for it was customary to wash the barley two or three times before putting it into the water in which it was to be boiled.

Dr. Meredith Young mentioned a similar case of adulteration which he believed was fairly prevalent, namely the addition of ultramarine to lump sugar.

Articles of Association.—The Branch then proceeded to consider the Articles of Association of the Society, and in connection therewith letters were read from the Honorary Secretaries of the Society, and the Honorary Secretary of the Midland Branch.

It was resolved that this Branch approves of the widening of the representation of the Society to such an extent as will allow of Army Medical Officers at home and abroad, and also Medical Officers of Health practising elsewhere than in the British Isles and their dependencies, as also Medical Inspectors of the Local Government Board, being admitted as Fellows, provided they are engaged in some branch of the public health service or some cognate service.

The Branch resolved that in view of the altered conditions, particularly as regards the distribution of Members, the time has now arrived for reconstitution of the Council of the Society, on the basis ofre presentation of all Branches in proportion to the number of their Members.

It was further resolved that Article 46 be amended by the addition of the following: "And that the Honorary Secretary of every Branch of the Society shall be ex-officio a Member of the Council of the Association."

It was further resolved that Article 40 be repealed, and in its stead the following words be inserted: "That each Branch be allowed a small fixed sum per Member for Branch expenses, and that the travelling expenses of Branch Representatives on the Council of the Society when attending Council meetings or meetings of Committees of the Council, be paid by the Society instead of being paid by the Branches as at present."

It was further resolved that Article 41D read as follows: "Two Honorary Secretaries of whom one shall be a Member of the Metropolitan Branch and one a Member of a Provincial Branch."

It was further resolved that Article 31 be amended by the addition of the words "June or" after the words "in the month of."

Dr. Laird then read a paper, illustrated by photographs, on "A Pure Milk Supply."

Dr. Herbert Peck moved a hearty vote of thanks to Dr. Laird for his paper, from which he said he had derived considerable information, and in which he was in entire sympathy. Drs. Wheatley, Greenwood, Garstang, Buchan, and Young, and the President, joined in the discussion.

Yorkshire Branch.—A Meeting of the Branch was held at the Library at the County Hall, Wakefield, on Thursday the 26th January, 1905.

There were present: Drs. Scatterty, the President (Keighley), Anderson (Wortley R.), Angus (Bingley), Burman (Wath-on-Dearne), Cameron (Leeds), Ewing (Ardsley E. & W.), Forsyth (Birstall), Hicks (Easingwold), Housley (Retford), Hunter (Pudsey), Martin (Brighouse), McLean (Doncaster R.), Milburn (Wakefield), Moore (Huddersfield), Neech (Halifax), Pearce (Darton), Porter (Leeds), Stedman (Halton), Wade (Wakefield), Wilson (Wakefield), J. R. Kaye, Hon. Sec. (Wakefield), and Dr. Wood, a visitor (Wakefield).

Dr. Anderson, of Wortley Rural, near Sheffield, read a paper on "Scarlet Fever: the prevention of hospital complications and return cases," which was extremely well received and created an interesting discussion (*see* p.372).

Dr. Hicks, of Easingwold, also gave an interesting paper on "The Use of Sera, particularly the anti-streptococcic serum of Puerperal Fever." The discussion was adjourned to the next meeting.

After the consideration of the Articles of Association and the proposed Building Bye-laws for Rural Districts, the members were invited to partake of light refreshment.

CURRENT PUBLIC HEALTH LITERATURE.

Annales de l'Institut Pasteur, Paris, Vol. XVII.

(No. 8.) Research on the Fermentation of Milk. H. Tissier and P. Gashing.

(No. 11.) Report of the French Yellow Fever Medical Commission. Marchaux Salimbeni and Simond.

(No. 12.) The Passage of Rabies Virus through Filters. Remlinger.

Vol. XVIII.

(No. 1.) The Value of Injections of Diptheria Antitoxin (Subcutaneous and Intravenous.) L. Gruveilhier. (He concludes that the intravenous method is best. It proved effective six hours after the subcutaneous injection had lost all efficacy.)

"La Clinique Infantile" (Paris). 1904, 2de, Année.

(No. 11.) Toxicité accidentelle due lait des mères pour leurs enfants. Par le Dr. Jégourel.

(No. 12.) Les Anomalies de la Sécrétion lactée chez les mères. Par le Dr. Jégourel.

(No. 14.) Stérilization absolue du Lait par surchauffage. Par le Dr. Lecornu.

Un cas d'atrophie infantile guéri par l'emploi méthodique du lait sterilisé. Par Mdlle. Dr. Rousel, Rouen.

(No. 15.) Le progrès des Gouttes de Lait en Grande-Bretagne. Par le Dr. McCleary (Medical Officer of Health, Battersea).

L'Extinction du rachitism. Par les Gouttes de Lait, Conférence de M. le Dr G. Variot.

La loi Roussel. (The text of the law for the protection of Infancy known as Roussel's Law.)

(No. 16.) Instructions aux mères pour allaiter leurs enfants, elaborées au nom de la Commission des Crèches de la ville de Paris. Par M. le Dr. G. Variot.

(No. 17.) Causes de la fréquence du Rachitisme dans les crèches. Par le Dr. Braunberger.

(No. 20.) Remarques comparatives sur la mortalite infantile et sur le mouvement de la population en Allemagne, en Angleterre, et en France. Nécessité de vulgariser l'hygiène infantile. Par M. le Dr. G. Variot.

(No. 22.) Loi sur la protection de l'Enfance. Nouvellement promulguée en Espagne (La loi a été traduite intégralement. Par le Dr. Sanchez de Silvera.)

Berliner Klinische Wochenschrift, Vol. LI.

(No. 9.) Bactericidal Reaction in the Serum of Typhoid Patients. R. Stern and W. Korte, Berlin. (They consider that tests based on this are more delicate than agglutination. Less than half an hour is required for it, and the results are manifest in eight hours, or at most by the next morning. The principle of the test is the addition of the suspected serum to a combination of fresh normal serum and typhoid bacilli. By constantly reducing the amount it is possible to determine the smallest possible proportion which still displays bactericidal action. The suspected serum is heated to 56 C. to render the complement inactive, and is placed in a row of test tubes, diluted to 50, 100, 1,000-fold or more with ·85 per cent salt solution. The tubes are filled in turn with one-half, one-fourth, one-eighth, etc., of the original dilution, and then filled to 1 cc. with the saline. Then ·5 cc. of a 1/5,000 twenty-four hours bouillon culture of typhoid bacilli is added to each tube, and also ·5 cc. of fresh rabbit serum diluted 10 or 15-fold with ·85 per cent salt solution. Each tube then contains 2 cc. of fluid and the bacilli, with graduated proportions of the suspected serum. The set of tubes is then placed in the incubator, and after three or four hours the contents are poured out on agar plates. These are kept for twelve hours in the incubator at the same temperature (37 C.), or the test can be limited to mere inspection of the tubes after eight hours in the incubator. In the controls, 35,000 colonies and more developed, while with dilutions of 1/2,000 to 1/16,000 none developed with the typhoid serum, and only 100 to 1,000 colonies in the dilutions above this to 1/256,000. The bactericidal action was still marked in a dilution of 1/4,096,000. The writers think that this method is destined to supplement the agglutination test in dubious cases, and possibly supplant it where an early diagnosis is necessary. They had no opportunity to test any patients before the eighth day.)

Erythema Infectiosum Stickler (Rubeola). Plachte, Berlin.

(No. 10.) The Tuberculosis Dispensary in Berlin. P. Jacob. (It has already proved its great usefulness as a link in the chain of compulsory insurance of the working class against sickness. Tuberculous subjects are diagnosed, watched over, contagion of others guarded against, and more favourable surroundings provided. The dispensary aims to do nothing which it is the right and duty of others to do, but to supplement and complete wherever the aid of others proves inadequate. Various charitable organizations co-operate with it.)

(No. 15.) Latent Foci in Tuberculosis, and the Tuberculin Test in the Light of Recent Research. G. Cornet, Berlin. (Cornet affirms that later researches have demonstrated that the reaction to tuberculin is a group reaction. It shows that there is some focus where a bacillus belonging to the tubercle group is ensconced, but it affords no information as to whether the bacillus in question is liable to prove dangerous to the existence of the bearer then or later. He expresses amazement that such serious investigators as von Behring, for instance, have allowed themselves to be misled by the Franz and Naegeli statistics, and based new hypotheses on them. The positive tuberculin reaction must in future be regarded as in itself no criterion as to possibly progressing tuberculosis. Only in combination with other symptoms pointing to progressing tuberculosis is its testimony of value. Reaction to tuberculin is no proof that the subject requires treatment, and the disappearance of the reaction is no proof that sanatorium treatment has been the cause of the disappearance. The slight amount of benefit now known to be derived from sanatorium treatment in itself, must be still further critically sifted. The insignificant anatomical lesions induced by almost entirely avirulent bacilli of the tubercle group—which are yet liable to cause a reaction to tuberculin—are not very important in pathology. The frequency of their occurrence is a question still to be solved.)

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SPECIAL NOTICES FOR THE MONTH.

MEETINGS OF THE SOCIETY.

At 9, Adelphi Terrace, 7.30 p.m.

Friday, March 10th. "The Increased Prevalence of Anthrax in Great Britain," by Professor Delépine.

*Friday, April 14th. "The Administration of the Midwives Act," by Dr. G. H. Fosbroke.

* The Council meets on this date.

North-Western Branch.

March 17th. "School Sanitation and the Duties of School Medical Officers," by Dr. A. Greenwood.

April 14th. "The Midwives Act," by Dr. E. Sergeant.

May 19th. "The Influence of Privy-Middens and Water-Closets on the Annual Epidemics of Zymotic Diarrhœa and Typhoid Fever," by Dr. A. W. Martin.

June 16th. "Discussion on the Housing of the Working Classes in Rural Districts." Opened by Dr. T. W. H. Garstang.

West of England and South Wales Branch.

March 16th, at Bristol. Papers by Dr. D. S. Davies, and Professor Kent (Professor of Bacteriology, University College, Bristol).

Southern Branch.

April 7th. At Southampton.

Northern Branch.

April 28th. At Darlington.

June 23rd. At Hexham.

October 27th. At Newcastle-on-Tyne.

Epsom College.—Mrs. Skinner, widow of the late Medical Officer of Health for Willesden, is a candidate for a pension. Subscribers to this Fund are invited to give their votes in her favour.

Continued on p. xii.

The second French Congress of Climato-therapy and Hygiene will be held at Arcachon on the 24th to 29th of April. The President is Professor Renant, of Lyons. Those interested in the subject can obtain any desired information of the General Secretary, M. C. D. Festal, Villa David, Arcachon.

International Society of Tuberculosis.—A new scientific society has recently been founded in Paris, under the name of Société Internationale de la Tuberculose. The scope of this Association is the study of all questions concerning tuberculosis and the centralization of means of defence. The Association is composed of medical men or scientists holding diplomas from French or foreign universities and colleges. The annual subscription is 10 francs (9s.) For further particulars and for applications, address M. le Docteur Georges Petit, General Secretary, 51, Rue du Rocher, Paris, France.

All Communications to the Editor should be addressed to the Offices of the Society, 9, Adelphi Terrace, London, W.C.

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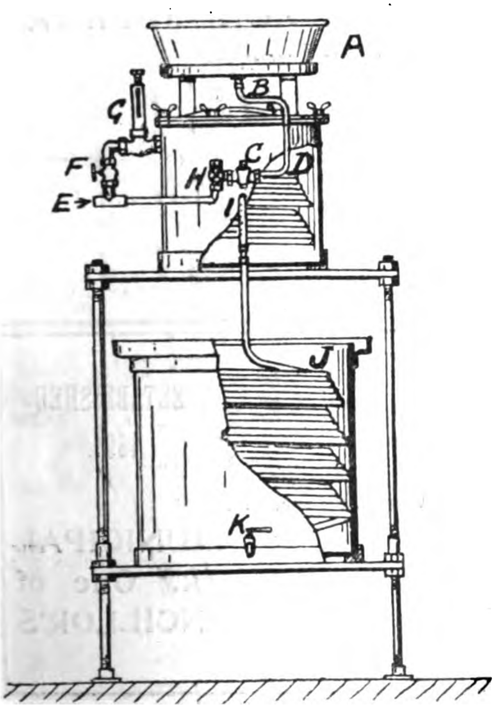

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CONTENTS.

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PAGE

SPECIAL ARTICLES—

THE LIABILITY OF VENDORS OF INFECTED FOOD (*C. E. Allan, M.A., LL.B.*) - - 415

THE REFORM OF THE MILK SUPPLY (*G. F. McCleary, M.D. Cantab, D.P.H.*) - 419

A PURE MILK SUPPLY (*A. J. Laird, M.D.*) - - - 437

THE DANGERS OF FAULTILY-CONSTRUCTED MILK-SHOPS (*Wm. Robertson, M.D., D.P.H.*) 445

THE ACTION OF FORMALIN ON MILK AND RENNET (*Dr. Ernst Löwenstein*) - - 452

THE EFFECT OF THE WEATHER UPON THE QUALITY OF MILK, AND THE USE OF PRESERVATIVES (*Bernard Dyer, F.I.C.; T. S. Dymond, F.I.C.; J. C. Thresh, M.D., F.I.C.* - - 458

ANNOTATIONS—

TRANSMISSION OF TUBERCULOSIS THROUGH FLIES - - - 418

PUS AND BACTERIA IN MILK - 444

BUILDING BYE-LAWS - - 451

MILK SUPPLY IN BIRMINGHAM 451

THE MILK QUESTION IN BELFAST - - - - 451

THE POLLUTION OF THE RIVER ISAR - - - - - 457

THE THIRD PLAGUE OUTBREAK AT SYDNEY - - - - 459

PARLIAMENTARY NOTES - - 460

VENTILATION OF THE HOUSE OF COMMONS - - - 462

Continued on Page vii.)

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CONTENTS—*continued.*

ANNOTATIONS (*continued*)—

	PAGE
REPORT OF THE VACCINATION EXPENSES COMMITTEE	462
VACCINATION UNDER RED LIGHT	464
IMPORTATION OF PORK FROM DENMARK AND HOLLAND	464
THE HOUSING ACTS	468

LAW REPORTS—

FROST *v.* AYLESBURY DAIRY COMPANY, LTD.	465
PRESERVATIVES IN MILK	467
IMPORTATION OF IMPOVERISHED MILK	467
THE REMOVAL OF HOUSE REFUSE	467

CORRESPONDENCE—

DESTRUCTORS AND ELECTRICITY	469
OVERCROWDING AT HEALTH RESORTS	470

CORRESPONDENCE (*continued*)—

	PAGE
HOSPITAL ISOLATION—A CORRECTION	470
SCARLET FEVER IN SHEFFIELD	472

REVIEWS—

INFANTILE MORTALITY AND INFANTS' MILK DEPÔTS	473
THE MEDICAL ANNUAL	474

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH, THE—

NORTHERN BRANCH	475
NORTH-WESTERN BRANCH	475
WEST OF ENGLAND AND SOUTH WALES BRANCH	476
SCOTTISH BRANCH	476
CURRENT PUBLIC HEALTH LITERATURE	477
NOTICES	xi, xii

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PUBLIC HEALTH:

The Journal of the Incorporated Society of
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Vol. XVII. No. 7. April, 1905.

THE LIABILITY OF VENDORS OF INFECTED FOOD.

By C. E. ALLAN, M.A., LL.B.,
Barrister-at-Law.

The recent decision of the Court of Appeal in the case of *Frost* v. *The Aylesbury Dairy Co., Ltd.* (briefly reported in this number), has a wide-reaching application, and may indirectly prove to be a powerful means of checking the spread of infectious diseases. In the case in question the defendant company were held liable for the damages caused to the plaintiff by reason of the illness and death of his wife from typhoid fever, which the jury found to have been brought about by reason of the fact that the milk supplied by the defendant company was infected or contained the germs of that disease. It was not found that this had been brought about by the negligence of the company, nor was it proved that there had been any negligence. In fact, the judges of the Court of Appeal stated that the company had come very well out of the inquiry. The decision turned solely on the question as to whether or not the Company had warranted the milk as being fit for food. There was no express warranty, but the Court held that there was an implied one. When a person warrants an article to be fit for any particular purpose he thereby renders himself liable for all damages that may be caused if the article turns out to be unfit for that purpose. He becomes practically an insurer against injuries arising from that use of the article, and he is liable whether or not the defects in it could have been discovered or prevented. They might have been such that no reasonable care and skill could have found them out, yet nevertheless he is liable.

When a sale usually takes place, the vendor gives no such warranty. It is only in special cases that a warranty is implied. In order that it may be implied, it must appear that the purchaser relied on the seller's skill or judgment, and that he made known to the seller the purpose for which he wanted the article, and also the fact that he was relying on the seller's skill or judgment, and it must also be in connection with some article which the seller usually sells, and about which it may be assumed that he has special knowledge. Thus, if on buying a motor car, the purchaser goes to a regular maker or vendor, and tells him the class of work he wants the car to do, and that he relies upon him to supply a suitable car, there will be an implied warranty that the car supplied is fit for the purpose, and if in the course of the reasonable use of the car an accident happens from any hidden defect, the seller will be liable for all the damage done.

In the Aylesbury Dairy case the court held that the milk was clearly bought for food, and that the vendors were aware of that fact. That would be implied in the case of most articles which are usually sold to be eaten or drunk. Then the defendants usually sold milk, so that the question only remained as to whether the purchaser relied on the special skill or judgment of the Company, and that they knew he so relied. As a matter of fact most people do rely on their tradesmen to see that their articles of food are suitable for the purpose. A butcher or a baker is an expert in his trade, and we rely on his skill and knowledge to supply us with sound meat and wholesome bread. He knows that we do, and that we are too ignorant to discover differences in quality for ourselves, and not unfrequently he cheats us in consequence. Most juries would find that the purchaser so relied, with the result that the butcher or baker would be held to have warranted his meat or his bread, and to be liable for damages, if it proved unwholesome. Similarly, a publican would probably be held to warrant that his beer did not contain arsenic, and a restaurant or hotel keeper that his dishes would not produce ptomaine poisoning, or his oysters typhoid fever. They could, however, all escape from this warranty by putting up notices to the effect that they did not warrant their articles. But such a notice would not save them from liability if injuries were occasioned by reason of these vendors not using proper skill or care. They would still be liable for negligence. That, however, would make the case against them far more difficult to prove.

As epidemics are frequently caused by bad water, an interesting question arises as to how far the above law applies to water companies and to corporations who supply water to their districts. Technically the doctrine of warranty does not apply, at least that was apparently the opinion of the majority of the House of Lords in *Milnes* v. *Mayor, etc., of Huddersfield* (11 App. Cas. 511). In order to have a warranty you must have a sale, and the supply of water under statutory powers was not in their opinion a sale. But to make up for this, these companies and corporations are bound by the provisions in their Acts of Parliament, or provisional orders, or by the Public Health Acts, and these to a very great extent take the place of the implied warranty. In the case of companies and of corporations supplying water under a special Act, Sect. 35 of the Waterworks Clauses Act, 1847, is almost invariably incorporated. That section enacts that "the undertakers shall provide and keep in the pipes to be laid down by them a supply of pure and wholesome water sufficient for the domestic use of all the inhabitants of the town or district." That is an absolute duty, and companies or corporations having such a clause cannot escape from this duty by saying that they do not warrant the water. If in breach of this duty they keep in their mains water that is contaminated with germs, they will be liable for all injuries that ensue in consequence thereof. If it therefore can be brought home to them that an epidemic is due to the supply of water being contaminated, the water company or corporation will be mulcted in very heavy damages. This is a consideration that will perhaps make these bodies more anxious to obtain proper supplies of water.

If, on the other hand, a local authority does not supply water, and leaves it to individuals to drink from impure wells, there is no remedy except a complaint to the Local Government Board. When, again, a local authority supplies water under the Public Health Acts, without having a special Act, they are bound by Section 55 of the Public Health Act, 1875, "to provide and keep in any waterworks constructed or purchased by them a supply of pure and wholesome water." This also is an absolute duty, but whether the remedy is by action or merely by complaint to the Local Government Board under Section 299 of that Act, is not quite clear. It will probably be discussed in the courts on some future occasion, but it certainly seems that the authority ought to be liable for damages if they supply bad water.

What, however, seems the most important feature of the Aylesbury case is the fact that this is probably the first case in which a person or company has been found liable for damages for communicating a disease to another through food. It is only quite recently that the communication of disease has been considered as a ground for recovering damages. In the old books it was a criminal offence to expose a person who suffered from plague, but one looks in vain through the older text-books for any case where a person recovered damages by reason of his being infected by another. The only cases one meets relate to the communication of venereal diseases, but the courts refused to allow such actions to be brought on grounds of morality and public policy. The recent Gillingham small-pox case was one of the first in which damages for infection were successfully recovered, although the legal principle governing such cases was enunciated by Lord Blackburn in the House of Lords in *Metropolitan Asylums District* v. *Hill* (1881), 6 App. Cas. 193.

This change has not been brought about by any alteration of the law. The principles of our common law are sound enough and wide enough to adapt themselves to most of the varying conditions of human life. The real cause of the change is to be found in the greater accuracy of the evidence which can be produced. The advance of medical science and the vastly increased attention given to sanitary matters have enabled experts to trace the causes of disease, and to convince juries that their deductions are correct. An epidemic is no longer regarded as a visitation sent by Providence to be accepted without a struggle. It is looked upon now as the result of ignorance, carelessness, and want of attention to hygienic laws. The labours of Medical Officers of Health have made it possible, occasionally at least, to identify the person guilty of the negligence or of the breach of these laws. When that can be done the common law provides a remedy for the injury caused. That remedy unfortunately does not always work justice. In the Aylesbury Dairy case an innocent company were made to pay damages on the technical ground of an implied warranty. The giving of such a warranty will no doubt be avoided by vendors in future whenever possible; but liability for negligence or want of reasonable care will remain. That in itself will make vendors more careful, and the verdict of the jury in that case will not be without its effect on the general health of the community.

TRANSMISSION OF TUBERCULOSIS THROUGH FLIES.—Noticing the number of flies that flock about the spittoons of phthisical patients, Dr. E. H. Hayward (*New York and Philadelphia Medical Journal*, October 1st, 1904) undertook a series of experiments with the common house fly and the blue-bottle fly to determine whether or not they may be an etiological factor in tuberculosis. Sputum in which the bacilli were known to be present was put into watch-glasses and covered with fine wire screens, on which the flies could rest and feed through the meshes without soiling their feet and wings. Six hours afterward clean cover-glasses were introduced, and during the next three or four hours these became soiled with the flies' excrement. Examination showed tubercle bacilli on each one. That the vitality of the bacilli was not impaired was proved by making cultures of the fæces on glycerin agar and obtaining growths of the organism, and also by injection of the fæces, rubbed up with sterile water, into the peritoneal cavity of guinea-pigs, which developed tuberculosis. The author points out that through the agency of flies the bacilli may be carried from the sputum of one person and deposited upon the food of another, so that the passage from one person's lungs to another's alimentary canal may be accomplished within a few hours.

THE REFORM OF THE MILK SUPPLY.*

By G. F. McCLEARY, M.D. (Cantab), D.P.H.,
Medical Officer of Health of the Metropolitan Borough of Battersea.

With the beginning of the twentieth century, preventive medicine is entering upon a new era. We are now confronted by a set of problems which are different in many respects from the problems so successfully attacked by the great masters of preventive medicine of the last century, and which call for the application of different preventive measures. The objects which Edwin Chadwick, John Simon, and our other great forerunners of the last century sought to attain, and which to a large extent they did attain, may, I think, not unfairly be described by the phrase "civic cleanliness." They sought to provide pure water supplies; to remove refuse and filth from the vicinity of human beings by establishing improved systems of drainage and sewerage, and better methods of dust collection; to provide open spaces and wider streets; to pave streets, yards, etc.; to raise the sanitary standard of building construction; to provide proper burial grounds; to regulate offensive trades; and to abate the smoke nuisance and the pollution of rivers. Of course we all know that they did very much more than this. Their work was too great and its effect too far-reaching to be described by any single phrase. Still, I think it not unfair to say that, broadly speaking, we may regard the attainment of civic cleanliness as the great object of our public health administration in the nineteenth century. It cannot be said that this object has been wholly attained. In a country whose capital is still supplied with something like filtered sewage as drinking water, it is obvious that there is much yet to be done to secure civic cleanliness. But the point is that any further progress in this direction must, or should, take place on the lines already laid down by our predecessors. Their methods of civic sanitation have stood the test of experience, and all that is wanted is a further development on existing lines. It is otherwise with the new problems that now press for solution. These are problems of a different nature, and demand new methods of treatment, although the principles underlying the methods will be found, probably, to be the same. Preventive medicine in the nineteenth century was chiefly occupied with problems of *civic cleanliness*; in the twentieth century we are confronted with the problems of *personal hygiene*, and the three problems of this kind which appear to me to call most urgently for solution at the present time are: (1) The problem of infantile mortality; (2) The problem of school hygiene; (3) The problem of the milk supply.

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* Read before the Incorporated Society of Medical Officers of Health, 10th February, 1905.

The problem of the milk supply is pre-eminently a question of personal hygiene. The problem is to supply to the consumer, at a low price, pure milk from healthy cows. This is far from being merely a question of cowshed construction and sanitation. No doubt a clean, well-constructed cowshed is an aid to the production of clean milk, as a clean, well-constructed operating theatre is an aid to aseptic surgery. But in milking, as in surgery, the standard of cleanliness of the operator is the condition of paramount importance. The best thing that can happen to the cowshed is that it should be speedily abolished, and the cows allowed to live in the open air, as Nature intended that they should live. This alone would be a considerable reform, tending to improve the health of the cows and to conduce to cleanliness in milking. But much more than this is required. In order to supply the consumer with pure milk, at least four conditions must be fulfilled. First, the cows must be healthy; secondly, the process of milking must be carried on with the most scrupulous cleanliness of cows, milker, and utensils; thirdly, the milk, immediately after milking, must be cooled down to a temperature not higher than 40 ° F.; and, fourthly, immediately after cooling the milk must be bottled, and the bottled milk kept at a low temperature until it is delivered to the consumer. By the precautions during milking the initial pollution is minimized, and if the milk is promptly bottled the subsequent contamination, especially the contamination within the home of the consumer, which Dr. Newsholme has shown to be the most important factor in the causation of summer diarrhœa, is also minimized. And we must never forget that all this must be done without raising the price of the milk. The problem of the milk supply is really a threefold problem. In the first place we must prevent initial pollution at the time of milking; secondly, the milk must be protected from subsequent pollution, including pollution within the home of the consumer; and, thirdly, the milk must be supplied at a price low enough to bring it within the reach of the poor. To prevent initial pollution, our attention must be directed to the farm in the country. Any methods having for their object the purification or quasi-purification in the city of milk already polluted in the country—such methods as sterilization, pasteurization, centrifugalization, or filtration—must be regarded merely as makeshifts, to be abandoned when better methods become practicable.

It is not intended in this paper to point out in what respects our methods of milk production are defective. We all know that the present condition of the milk supply is a reproach to preventive medicine. There is ample evidence of this in the monumental book which embodies the results of Dr. Newman's valuable work on this subject—work which has conferred distinction upon the whole public health service. My object is to discuss the various remedies which have been proposed. I would only say that the epidemiology of milk is far from complete, and that fuller knowledge will most probably add to the dangers which we now know to exist in the present state of the milk supply.

It has been suggested that in the reform of the milk supply the initiative should be taken by the consumer: that the consumer, instead of regarding the cry for clean milk as something of a "doctor's fad," should realize the dangers that lurk in his milk jug, and make an effective demand for pure milk. This method would certainly lighten the labours of the Medical Officer of Health, but a little reflection will surely show that it is quite impracticable. By what means is the consumer to test the quality of the milk supplied to him? According to the leading English text-book, even a bacterial standard may be inadequate as a test for cleanliness. A milk may appear fairly clean to an ordinary observer, and yet contain pathogenic bacteria. It is true the consumer may visit the shop from which his milk is distributed, and satisfy himself that the china pans on the counter and the gilded cows in the shop-window are in a state of spotless cleanliness, but the initial pollution has occurred miles away in the country, and the cleanliness of the milk-shop is unfortunately no guide to the cleanliness of the cowshed and cows.

When we endeavour to stimulate the consumer to bestir himself and create an effective demand for pure milk, he may not unnaturally retort that that is more our business than his, since we are paid for it while he is not. As a ratepayer, he may point out that he regards his public health department as a specialized organization for the protection of his health, and that if we attach so much importance to a pure milk supply, it is our business to get it for him. This argument appears to me to be unanswerable.

The suggestion that the initiative in milk reform should come from the consumer seems to me to be a symptom of a tendency which is unfortunately very much in evidence at the present time—a tendency to look to education as the main, if not the only road to sanitary salvation. One cannot attend a meeting of sanitarians or open a sanitary journal, without being assailed on every side by prophecies of the glorious results which we may confidently expect from the teaching of hygiene in elementary schools. Questions of administration seem to be taking a subordinate place, and work which should properly fall to the Medical Officer of Health seems in a fair way to be placed upon the shoulders of the schoolmaster. In the prevention of disease it appears—if I may be allowed to mutilate the famous line from *Locksley Hall*—that the Medical Officer of Health withers and the schoolmaster is more and more. I have no wish to minimize the value of education in sanitary reform, but I think there is just as much, if not more, need for strong and efficient administration. It is not because of education, but because of strong and efficient administration, that small-pox is now practically extinct in Germany. It is true we should be benefited by the German's education, but it is also true that we should be all the better for more firm administration of the German type, and it must be borne in mind that few educational methods are more effective than efficient administration. Every Medical Officer of Health knows the remarkable educational effect of a heavy penalty in an unsound meat prosecution.

It has been suggested that adequate reforms could be secured by transferring the administration of the law relating to milk from the Rural District Councils to the County Councils. I cannot understand upon what grounds the proposed change is deemed to be capable of achieving the object we desire. Wherein lies the difference between the personnel of the Rural District Council and the County Council, that is going to evolve order out of chaos and cleanliness out of unmitigated dirt? In the rural counties, that is to say in the milk-producing counties, both bodies are largely composed of, or at all events controlled by, persons directly or indirectly interested in the milk trade. And what have the rural County Councils done for sanitation in the past, that this confidence should be bestowed upon them? It is worth while to examine this question a little more closely. From a Local Government Board Return to the House of Commons, dated May 18th, 1904, it appears that there are 62 administrative counties in England and Wales. Since these counties came into existence in 1888, every county has had the power to appoint a Medical Officer of Health. In no less than thirty-five counties no Medical Officer of Health has been appointed by the County Council. These are nearly all great milk-producing counties, including such counties as Berkshire, Buckinghamshire, Dorset, Somerset, Norfolk, Suffolk, Kent, and West Sussex, and the three divisions of Lincolnshire. And in many of the remaining twenty-seven counties the Medical Officer of Health is merely a consulting officer, receiving a nominal retaining fee, and is in no sense an administrator. In only sixteen of the sixty-two counties in England and Wales is there a County Medical Officer of Health devoting his whole time to the duties of his office; and some of these counties, *e.g.* London, Durham, Lancashire, the West Riding, Middlesex, and Glamorgan, are practically large Urban Districts. Taking the rural counties as a whole, it is not unfair to say that they are just as much defaulters as the Rural District Councils, and yet it is proposed to solve the problem of the milk supply by transferring administrative powers from one set of defaulting authorities to another set of defaulting authorities.

Let us consider briefly what is necessary for the efficient administration by a County Council of the Dairies, Cowsheds and Milkshops Order, and the regulations made thereunder. Much more than the appointment of a whole-time Medical Officer of Health is required. It would be necessary to appoint a large staff of veterinary and sanitary inspectors with ample allowances for travelling expenses, and a number of clerks, and perhaps some extra legal assistance. A bacteriological laboratory and a competent bacteriologist would also be necessary. In fact, it would be necessary to establish a highly-organized and well-equipped county public health department. Why the County Council should put the county ratepayers to this expense in order to supply the large towns with pure milk, is a question which the County Councillors would have considerable difficulty in explaining to their constituents at the next election. The ordinary cow-keeper may not have a highly developed sense of cleanliness, but he has a vote, and we must remember that the man with a vote has been made a ruler and master over us. The vote of the rural ratepayer is not likely to be cast in favour of a County Councillor who would seek to restrict and hamper the rural producer, in order that the urban consumer may drink pure milk. The idea that the rural county councils are going to solve the problem of the milk supply for us, seems to me to be based upon a confidence in the immediate possibilities of human altruism which I must sorrowfully confess I do not share. If the towns want pure milk, they must take steps to get it for themselves, and not look to outside bodies to get it for them.

One of the most striking characteristics of modern civic enterprise is the tendency of the city to extend its activity beyond its own borders, to put forth processes, so to speak, into the surrounding districts, in order to serve the needs of its citizens. To obtain pure water, Liverpool has gone into the heart of Wales. There, at an immense cost, she has converted a valley into a reservoir five miles long and over 1,000 acres in extent. Lake Vyrnwy, with its gathering grounds and its aqueduct 77 miles long, must be regarded as a process of the great social organism we call Liverpool. In the housing question we are moving in a similar direction. By the Act of 1900 an authority can now build dwellings outside its own area, and at the present time London is putting forth huge processes of workmen's dwellings at Norbury and Tottenham. With increased facilities of locomotion, we may anticipate a considerable extension of this movement. In the provision of sewage-works, burial grounds, and isolation hospitals, there may be found other instances of this tendency. In the control of the milk supply the same movement may be observed. Section 4 of the Infectious Diseases (Prevention) Act, 1890, enables the Medical Officer of Health to take action outside his own district. We know of course that this section is unworkable in practice, but still it is an instance of the centrifugal tendencies of modern civic health administration. In the Manchester Milk Clauses, now adopted by many towns in the North of England, another step in the same direction has been taken on the initiative of one of our greatest administrators, Dr. Niven.

The tendency we are now considering is merely an expression of the increasing predominance of the city in modern life. The city is the great energizing centre of our time. Sanitary reform must proceed in the same direction as other tendencies of social development if it is to be effective, and it is, therefore, in the city that we must seek the organizers, administrators, and capital which we require to solve this difficult problem of the milk supply.

It is not, however, to a mere increase of the city's powers of outside inspection that we must look for a really effective reform. It would be impossible to frame a practicable scheme of inspection by which the large towns could adequately control the sources of their milk supply. It would be necessary for each large town to employ its own particular army of veterinary and sanitary inspectors. The cost would be great, it would be practically impossible to prevent much over-lapping, there would be continual friction and all the usual disadvantages of incoordinated administration. The only chance of obtaining genuine reforms by mere inspection lies in a transference of the law relating to milk from the local authorities to a central authority, such as the Local Government Board. This, however, is not in the least likely to take place. Although at the present time there may be a tendency towards increased central control, there is none, I think, towards an extension of direct central administration. In fact the tendency is rather in the opposite direction. In the last Factory Act there was an actual transference of duties from the Home Office to the local authorities. The instinct of local government is deeply rooted in our national character, and any considerable limitation of the powers of the local authorities, such as is involved in this suggested transference, would be strongly opposed, not only in the rural but also in the urban districts. It is highly improbable that any Government will venture to suggest such an administrative revolution.

But the problem is too great to be solved by any scheme of mere inspection. There are limits to the function of inspection. As Dr. Leslie Mackenzie has pointed out, there are things inspection cannot do: "An inspector can advise, direct, forbid, threaten, prosecute. But at its best inspection is regulative, not productive. It cannot alter the habits of a people, the structure of a society, the economic condition of supply."* In another and very much simpler branch of Public Health administration the limits of inspection have been demonstrated. No one now will contend that the inspection of private slaughterhouses can be made to yield satisfactory results. All sanitarians are agreed that a well-appointed public abattoir is absolutely necessary to protect us from the "ills that flesh is heir to." In milk control the limits of inspection are really still more obvious, for what we have to do is to inspect not an article but a process. By what system of inspection of surgeons uncleanly by nature could aseptic surgery have come into existence? To obtain pure milk we must change the personnel of the present employés in the milk trade. No amount of inspection will make a dirty man clean; we must displace the dirty man by a clean man. We must substitute for the present milk employé a person who may be depended upon to maintain a decent standard of cleanliness, and observe a reasonable moderation in the matter of expectoration in the absence of external compulsion. Such persons are to be had, but they will demand better pay, and unless economies can be effected in other ways the price of milk will rise and we shall be no better off than we were. Whatever else we do we must not raise the price of the people's milk. If our efforts result in raising the price of milk so as to take it beyond the reach of the poor we shall have done more harm than good. In order to avoid a rise in price it will be necessary to concentrate the milk industry into large producing and distributing units.

In a recent paper Dr. Edmund Cautley has suggested two ways out of this difficulty. His first suggestion is "That milk companies should amalgamate and obtain Parliamentary powers, somewhat similar to those which the old water companies possessed"; that Parliament should "grant to each milk company of a certain size, or, better still, to an amalgamation of several companies, an area of distribution, such as a parish or borough, with certain definite restrictions, *viz.* that the milk must be the undiluted product of the cow, uncontaminated by preservatives, filtered and bottled at the farm or a local depot, cooled down to 40° F., containing 3·0 to 3·5 per cent of fat and not more than 100,000 micro-organisms per cubic centimetre, and at a price not exceeding 2d. a pint."

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* Mackenzie, "The Hygienics of Milk" (*Edinburgh Medical Journal*, 1898).

There is much to be said for this proposal. There would be a definite fixing of responsibility, the respectable dealers would be freed from the unfair competition of the adulterating scoundrels who now infest the milk trade, and the concentration of the industry into a comparatively small number of businesses would greatly cheapen the cost of production and distribution. The economies in delivery cartage alone would be enormous. But there are obvious disadvantages. We should be handing over our milk supply to a set of monopolist companies, and the history of monopolist companies in this country and in America is not such as should encourage us to add to their number.

Dr. Cautley prefers his second suggestion. He says: "The only plan for dealing with the matter thoroughly seems to me to be the municipalization of the milk supply. That the milk should be managed in a scientific manner, rather than according to the haphazard methods at present in vogue, will be generally admitted. Its management should pass as soon as possible directly into the hands of the municipal authorities, rather than through the intervention of milk companies, which will eventually have to be bought up in the same way as the water companies."

The same conclusion is reached by Dr. Lawson Dodd in his interesting little book, *The Problem of the Milk Supply.*

Both these writers, however, have been anticipated by Dr. Leslie Mackenzie, who was the first, so far as I am aware, to point to the municipalization of the milk supply as the solution of the problem. In the admirable paper from which I have already quoted he writes as follows:—

"As with water, with gas, with electricity, with sewage, with the slaughtering of cattle, with hospital isolation, so with milk; experience is slowly proving that municipal control will remain a feeble and ineffective compromise until the municipalities have a direct commercial interest in the purveying, or preparation, or distribution of milk. Already one observes signs of a tendency in this direction. . . . I do not urge the insane proposal that the municipalities should forthwith acquire the dairies, milk-shops and byres; what I urge as a possibility within the range of ordinary municipal practice is that, as with lodging-houses, working-men's houses, wash-houses, and the like, the municipalities might, by a piece of concrete practice, create the model for a vast industry. If, in the course of time the demand for clean milk presses on the resources of the municipal installation, these may be extended by many methods."

With these remarks I entirely agree. The more I study this question the more firmly am I convinced that only by an extension of the principle of direct municipal ownership and supply can we bring about a really adequate reform of the milk supply.

DISCUSSION.

Dr. Boobbyer (Nottingham) said that he was as strongly in favour of progress as any one there present, but in considering the suggestions which this very thoughtful, instructive, and suggestive paper contained, he was impressed with the necessity of looking very carefully indeed at the financial aspect of the matter before they committed themselves to even the most modified approval of it. He could not help feeling that they should bear in mind a quotation from a speech of Lord Rosebery, the gist of which was that they should go slow in municipal expenditure. He came from a town where there was a very strong and influential opposition to the growth of the public debt, which had been largely incurred for the sake of municipal and sanitary improvements, and a good lot of work had been done in the past which was not even now digested. One or two instances would give them an idea of what was passing in his mind. If they were to go on with hospital isolation they would have to spend a good deal more money than at present, or with abattoirs most suitable for the supply of butcher's meat to the consumer. At the present time his Town Council had purchased a piece of land for public abattoirs, but they dare not proceed with any further expenditure in this direction without due regard to what return would be likely to accrue to the ratepayer on the proposed expenditure. Three years ago he had stated at a public meeting that this project was on foot, but they dare not spend the £2,000 necessary for this piece of municipal sanitary furniture. With regard to the proposal before the meeting to municipalize the dairy farms of the country, until that evening he had never heard the suggestion made before. Many years ago he had taken up and had been very proud to support a project for providing clean milk for the infant population of the city he was connected with. A very well-known dairy farmer in the neighbourhood of Nottingham provided a sterilizing establishment at great cost in connection with his farm, and supplied the completely sterilized milk (boiled for 10 minutes) at the exceedingly reasonable charge of 10d. per gallon. This project has had to be abandoned as a commercial failure. They had not, however, given it up. Sterilization of milk must be carried into practice in the not distant future, unless they were to neglect the obvious duty of the governing body. They made two or three thousand pounds by the sale of the milk from the sewage farm, and they would find that the Sewage Commission had said some very nice things about the farm in the report. In conclusion, he thought that even if the milk-producing farms in country districts were under municipal control, unless the scheme was extremely well organized it would be impossible to guarantee the effective performance of proper sterilization.

Mr. James Sadler (Sec. of the Cheshire Milk Producers' Association) represented in an official capacity a very large number of dairy farmers and their landlords. The paper that had been read by Dr. McCleary, was as far as he could see, a plea for the municipalization of the milk supply in the same way as water, gas, and electricity. You could manufacture your gas and your electricity within your own area, and so far as the water supply was concerned, if they attended to the proper filtration, it was very much a question of pipes. With regard to the milk supply it was a different thing. The cows should live in the country, although he could hardly agree with Dr. McCleary that they should be kept and milked in the open air. He was afraid that the proposal to municipalize the milk supply was not quite practical from a farmer's point of view, unless they could see their way to buy up the farms, and the stock in trade, and the cows. In Cheshire alone they had approximately 100,000 cows, which if valued at the low price of £20 each would amount to £2,000,000. He was quite prepared to admit that the ideal of what constitutes clean milk production was too low, but it was a process of education, and on the best managed farms the ideal already existed. They might at present be considered isolated farms, but he did not admit that they were few in number, and in fact they were growing more numerous every day. In his opinion this was the direction in which they, as representing the public health authorities, should develop. They could not do without the farmer, however unimportant he might appear from an outside point of view. They could not do without the dairy farmer, therefore they should approach him reasonably, encourage him, and carry him with them, and they would not find him half so black as he was painted. The dairy farmer, like every other farmer, moved slowly, like the processes of nature with which he was associated, but he was open to conviction, and once he was persuaded that the way they pointed was the right way—right also in the public interests,—then he would move with them, for if he was slow he was equally sure. They should not aim at displacing the present methods of milk production and distribution, but should aim rather at perfecting them. He would suggest that, so far as the country and the milk supply was concerned, efforts should be made on co-operative lines, if they chose, to establish local receiving depôts, where the milk could be taken from the farms to a convenient centre and there dealt with, whether in the direction of sterilizing or pasteurizing, or whatever way was thought best according to the dictates of modern science, with up-to-date appliances established for cooling the milk so there should not be the least risk in connection with it. One of the most important things, in his opinion, that Medical Officers of Health should aim at, was to see that the railway vans were put into something like a sanitary condition. The railway vans in which their milk was conveyed to town were in many cases a perfect disgrace to everybody concerned. He did not say that the railway companies knew of this, but they ought to, and it was the farmers' duty and the duty also of that Society to see that the vans were put into the sanitary condition of what were neither more nor less than travelling dairies. With regard to the distribution of milk, it might be very greatly economized, as it has been suggested by Dr. McCleary, by saving a great deal of over-lapping. With regard to the administration of the Dairies and Cowsheds Order in the County of Cheshire, they had both urban and rural representatives, and his experience was that they held the balance pretty evenly as between the parties. The Rural District Council was alive to its duties in this respect, and they had for some time past been administering the Dairies and Cowsheds Order. In his opinion there was one difficulty, and that was that the onus of putting premises in a proper state was on the tenant and not on the landlord. What did it mean when an order went to the tenant to repair the premises? He had either to persuade the landlord to do it, or do it himself, or give up his business. He was, however, pleased to say that some landlords in Cheshire had risen to the occasion and done all that was needful. One estate was spending 50 per cent of its income in this direction. Unfortunately, not all landlords were doing it, and he thought that the putting of the premises of milk-producing farms in a proper state of sanitary repair was undoubtedly the duty of the landlords, and the Medical Officers of Health had every right to call upon the authorities to do their duty in the matter.

Dr. Rayment was in the habit of inspecting a number of dairies in Wiltshire, and could not agree with Dr. McCleary that the milk would not be increased in price by his suggestions being adopted. In his opinion it would be absolutely impossible to supply the milk at the present price. There was no doubt that it was difficult to control the condition of the milk. Milking took place between four and five o'clock in the morning: the masters would not get up, and who was going to see to the men. Cowmen were not what they ought to be about their hands and clothes. If a man got up in an insanitary cottage, went out and put his dirty head against a cow's dirty flank, something must get into the milk pail, and he himself had seen things too filthy to mention in the milk. At the same time he found that there was a great deal of improvement in the condition of the cows themselves. In one instance there were 200 cows at one farm which were currycombed every day, but that of course meant extra labour, and unless a farmer was paid sufficient for his milk to enable him to employ men at better wages, he would have to give up cows altogether. He was glad that Mr. Sadler had mentioned the dirty vehicles in which milk was too often conveyed. At times they had a good van; at others a dirty fish van or one that had previously carried vegetables. No trains were ever made up twice alike, and they all knew how easily milk was contaminated. It was impossible for the Medical Officer of Health to be at the railway station before eight in the morning to inspect the milk van. He believed that the farmers were quite willing to improve. He did not agree with Dr. McCleary that the cows should be kept out all day. It depended a great deal on the soil. In the winter they would be very much dirtier than if kept in-doors, for if kept out of doors they would usually congregate at a boggy spot. There had been a very great improvement amongst the cows during the last year in his district, and he thought that most of the farmers were alive to the fact that improvement must be made. They did not, however, in his neighbourhood get 10d. per gallon for their milk delivered.

Mr. Nugent Harris (Sec. of the Agricultural Organization Society), said that Mr. Sadler had struck the keynote that he would have struck had he preceded him. It was to a large extent a question of education, and much could be done by it. He would give them a very striking illustration in Worcestershire. Three years ago such a thing as sterilized milk was unknown in that part of Worcestershire. He held a meeting in a certain district, a society was started, and last year that small society had £1,000 worth of sterilized milk. They had made a profit. It was sold in Kidderminster and throughout the Black Country, and there was an increasing demand for it. It had been of the greatest possible benefit to the small holders, and they looked upon his society as their best friend. It had also been of the greatest possible benefit to the Medical Officer of Health of Kidderminster, an epidemic of scarlet fever having broken out there, and he found that he could get a good supply of sterilized milk. Requests had been received from other districts to start societies on similar lines. At Bennington, in Lincolnshire, they had a similar society, the last place in the world one would imagine for sterilized milk. Yet the society had found an outlet. The societies got 8d. per gallon for separated milk in pint bottles. In England the most difficult place in which to get milk was the village, and these societies had actually stepped in and filled the great want. There had been a meeting yesterday on the Duke of Sutherland's estate in Shropshire, and he had met there a farmer who had been making a large profit by the sale of sterilized milk. He also knew of a similar case near Framlingham, in Suffolk. He thought the line to take up was to start co-operative societies and organize depôts and deal with the milk on the spot. To attempt to deal with it in large towns was a great mistake. In Denmark all the organization was complete for large towns. He had been to Finland and Sweden, and found that organization on the part of the farmers was solving the question of the milk supply there. There the manager of the co-operative dairy had a right to go and inspect any farm and investigate, when the milk arrives in a bad condition. On a repetition of the offence it is fined, and on the third occasion dismissed from the society.

Dr. Herbert Jones said the Medical Officers of Health did not consider that the supply of milk could be settled by sterilization, otherwise if that were the case the farmer would think that he would be able to keep his farm in as bad a state as he chose. He had been a Medical Officer of Health in Cheshire and member of the Agricultural and Farmers' Societies, and two years ago they had had the advantage of hearing a neighbour of Mr. Sadler, Mr. C. B. Davis. He spoke quite as strongly on the question of cleanliness of farmers, but nothing had been said by either of these gentlemen as to the necessity of sterilization. Those Medical Officers of Health who like himself were connected with the rural districts, said that if the farmer would pay the same attention to his cows as he did to his horses, there would be no necessity whatever for sterilization, and the farmer would get a good price for his milk. Dr. McCleary seemed to say that by inspection they could not get dairy farmers to keep their farms in proper condition. He, Dr. Jones, thought they would be much more likely to get it if they could obtain security of tenure for Medical Officers of Health. He would tell them what Mr. Sadler might have told them from his experience in Cheshire. In one part of Cheshire there was a very large factory belonging to the "Milkmaid" brand of milk, and if they were to drive from one farm to another they could tell at once by the condition of the farms and of the cowsheds, which were the farmers supplying the milk to the factory. The farms were kept in proper condition, and that had been done without any pressure by the authorities; merely by the influence of the dairy. This showed that it was quite possible to get what they wanted. As to sterilized milk in bottles, he absolutely approved of milk in bottles as suggested, but not sterilized. If the milk were drawn off in a cleanly manner by a clean milkman, and all the surroundings were clean, and then put into sterilized bottles, it could be supplied two or three times a week in two or three dozen bottles at a time. We should then have a proper supply, not in the dirty, filthy condition in which it is now. The amount of money that would be saved might well go towards the keeping of dairy farms in a cleanly condition. He protested against the notion that any Medical Officer of Health would be satisfied with sterilized milk.

Dr. Rayment said that if milk were sterilized it lost a great part of its nutrient qualities, and therefore they would be cheating the public by supplying it as a substitute.

Dr. J. Tubb-Thomas said that the county of Wiltshire was alive to the necessity of having its milk sent out in proper condition, and with this end in view the Agricultural Committee of his Council had arranged for a conference of the whole of the sanitary and rural officials during the present month, for the purpose of considering the proper administration of the Dairy and Cowsheds Order. He thought that when inspection was properly carried out the condition of dairies and cowsheds would be enormously improved. With regard to Dr. McCleary's paper, he was sorry that he felt bound to disagree with him on many points. The main point of a municipal milk supply he thought rather utopian. Was their experience of their municipal organizations quite satisfactory? Take the water supplies, were they all satisfactory? They had a very good illustration, he thought, in the typhoid epidemic at Lincoln. According to Dr. McCleary, if they did anything that would increase the price of milk they would be doing considerable harm. Could they say that if the dairies and cowsheds were in the hands of municipal authorities they would be able to supply milk at as cheap a rate? Was that their experience with other municipal institutions? Then again, did Dr. McCleary propose putting a ring fence round London to prevent milk coming from country districts? (Dr. McCleary disclaimed any suggestion of preventing supplies of country milk.) Then they would have the municipal milk competing with the dairy farmers in the country. Dr. McCleary said that the cost of milk should not exceed 2d. per pint. Had he considered the question of the cost of traffic of milk in bottles, and did he propose having a railway station at every farm? Could the farmer six or seven miles distant from London deliver his bottles of milk to the railway station at the same price as the large churns? Could the dairyman in London deliver milk in bottles at the same price as from the churn? He thought the increased cost had to be taken into consideration at once, and therefore the whole scheme was absolutely impossible. They might say that the milk could be brought to depôts close to the station to be bottled, but that meant further handling and a further increase of cost. With regard to the statement that Rural Councils in England had fallen short in their duties, he would point out that the County Councils in England had no power. When the Dairies and Cowsheds Orders were first introduced they were enforced by the police, and there was considerably more work done then than after they were transferred to the Rural Sanitary Authorities. He was compelled to admit that such Rural Sanitary Councils, composed of farmers, were not the proper persons to enforce the Dairies and Cowsheds Orders. Were the Orders enforced by the County Councils, the condition of affairs would be better than they were at present. Another great danger attendant upon the municipalization of the milk supply was the question of concentrating the milk. The bringing of the milk by large collecting companies and then sending it away had very great disadvantages from a sanitary point of view. If the individual farmer had to send his milk away, he was compelled to have an efficient water supply for the purpose of cleaning his implements and cooling his milk. The farmer who had no efficient water supply would still do what he does now; he would continue to supply it to the collecting companies. The farmer would prefer to supply direct, for the big companies pay a smaller price for it. Then again as to infection; when they received milk in London from the large collecting companies they might find some of it tuberculous. The difficulty of tracing the source of tuberculosis in milk was enormous. He had investigated a case for Dr. McCleary during the last few days. Directly he reached the place where the milk came from he was confronted with the fact that the company in question received its milk from 300 farms, and it was mixed in vans. Where was he to look for this source of contamination? It was impossible to trace the farmer. When they found an infected milk the dairy company were prevented from sending the whole of their milk away. If the farmer had a proper water supply he would be able to send it away himself, and they would be able to trace any source of infection.

Dr. Lawson Dodd, speaking as a consumer of milk, and one who daily felt in jeopardy after reading the admirable reports from the Local Government Board and from members of that Society, said that he had heard no stronger argument in favour of the municipalization of the milk supply than had been adduced by the last speaker. What stronger argument could they have than the fact of milk produced by a number of farms being mixed at one central depôt, which might all be infected by one dairy farm? They might have inspected nine farms and got them into a fairly good condition, and the tenth might be in such a condition that an epidemic might break out within the jurisdiction of any member of this Society. He believed that at Nottingham, Reading, and other places, milk was already being municipalized, and was a large and profitable municipal industry. Municipal milk depôts for infants were rising up on all sides. One of the evils resultant from the present system of milk supply was the fact that in the poorer districts of large towns milk was hardly consumed at all. The milk used was inferior tinned milk, exceedingly dirty and exceedingly unwholesome, sent over from abroad. Milk supplied to them from English sources was also in such a condition as to be practically undrinkable, and certainly very dangerous to the person who took it. In his opinion to produce a pure milk supply they must reduce the number of persons who handle it, as much as possible, and each one of those persons must be educated. Because Lord Rosebery said that the municipal debt was growing, was surely no reason why sanitary measures of the greatest importance should be neglected. No doubt that during the last hundred years this municipal debt of this country had been growing. Great administrators like Sir Shirley Murphy would no doubt tell them that the condition of London with its large municipal debt was better than it was with a small municipal debt. It seemed to him that the real question to be decided was whether the matter was serious and urgent. Could they afford to wait for education? A large proportion of the milk coming from the farms was dangerous, and if they were to wait until all those farmers were educated they would have to wait a long time. What they really needed was more disinterested control on the spot, and not merely the man who inspected from a distance. At present it was only when an epidemic had broken out that they were able to have the epidemic traced. As a question of public health reform the municipalization of the milk supply might well be brought forward. In this respect it was not so important to hold their gas and electricity supplies as the milk supply.

Dr. William Butler said they were all agreed that the milk supply in this country, and particularly in the towns, was of a most execrable character. They regarded the condition of their milk as responsible for the very great infantile mortality. Only by improving the conditions of the milk supply could they hope to combat infantile mortality, which hitherto they had failed to reduce. The milk supply from the beginning to the end of its source was subject to contamination. Not only is the cow itself commonly a source of danger, and the condition of the cowsheds, but the conditions of storage. In London they saw enormous risks in its storage in shops and the houses to which it goes, and he had not heard any positive suggestion by which they were to eliminate those risks. He ventured to say they were not concerned in municipal enterprises nor private enterprises. They were primarily concerned in getting a pure milk supply, but he did not know that any there present were in a position to say that Dr. McCleary's suggestion would solve the difficulties. He was not even prepared to say that municipal control would improve matters. He thought that as to cost, the price would be increased much more by inspection. It would have to be inspected throughout the whole of its course, and even then it would fail. The cost of the inspection would raise the milk to quite a prohibitive price, and it did not seem to be practical. Dr. Tubb-Thomas referred to the mixing of milk in the country; all Medical Officers of Health in London were also well acquainted with the mixing that went on in the metropolis. These were circumstances, he considered, which should make them pause before they declared that the municipalization of the milk supply was a hare-brained scheme. If the farmers did not evolve a scheme to ensure a pure milk supply, then some municipal scheme would have to be considered.

Dr. Sidney Davies thought that the Society was indebted to Dr. McCleary for the very bold way in which he had taken up the question of the milk supply. He could not help thinking that, although the numbers had been against him, the weight of argument was very much in his favour. He understood that it was agreed that everything which was necessary should be paid out of the rates; therefore if there was a general demand, that would be a very good reason why the municipal authorities should deal with the milk supply. Dr. McCleary had shown that it could not be done satisfactorily by private enterprise, and he also said that they would not have to pay more for it. In any case he (the speaker) would like to see the experiment tried, and it seemed the only way before them. It was one of the most important matters they had to consider, and they must at all events supply the milk cheaply. They must consider the poor. Could the people pay for it, or would it come from the rates? For his part he did not care whether it came from the rates so long as they succeeded in getting a pure milk supply.

Mr. Cox said that there seemed to be a general consensus of opinion that pure milk could not be supplied at the present ruling prices with success, therefore it followed that with the municipalization of the milk supply the ratepayer would have to contribute his quota.

Dr. McCleary said that his contention was that, by concentrating the milk industry into large units, such a saving would be effected as to enable milk to be sold without increase of price.

Mr. Cox replied that if pure milk could be supplied by any process of co-operation it became a question whether the municipality or the local authority should carry on the work, or some other body regulated by control. If the evidence showed that they could not get pure milk at ruling prices and make a commercial success of it at 2d. per pint, and they had had evidence in both directions, it seemed to him that by adopting Dr. McCleary's suggestions they would be making a shot at a solution which was very unscientific, and Dr. McCleary had acknowledged that his scheme was hypothetical. Personally, as one who was not a very large consumer of milk, he should prefer to see the whole cost borne by the consumer. He would certainly like to feel assured that nothing but pure milk was being sold, but he did not see that they would be justified in calling upon the whole body of ratepayers to bear the expense.

Dr. Willoughby, speaking as an inspector of a large number of farms in the West of England, said that they had been told that one of the weak points was the want of inspection when the milking took place at five o'clock in the morning. Increased inspection would no doubt be a very useful thing, but would the London County Council employ hundreds of inspectors in the country for the purpose? That he thought was impossible. As to the impossibility of tracing infection, he could say that the precautions taken by the company with which he was connected were very thorough. The milk was analysed every day, and no outbreaks of fever had taken place in connection with it during the whole time the company had been in existence. The farmers were as a matter of fact compelled to report any case that might occur under a bond of £200, and could gain absolutely nothing by concealment, and by periodical examination it was very easy to ascertain contamination. He doubted whether the County Councils could do any more, or even as much. He thought, however, that much good might be effected by sweeping away all the petty milk dealers. With regard to efficient water supply, his company refused to deal with farms unless the water supply was satisfactory both for cleansing the implements and cooling the milk. He had refused several farms in Wiltshire on those grounds. He considered that much benefit might result by the co-operation of the farmers with the local authorities in the inspection of the farms.

Dr. W. A. Bond considered that one important point ought to be decided, and that was whether it was really dangerous to sterilize milk. A great deal of nonsense had been talked about sterilized milk. They sterilized their bread, their milk, their tea, and their coffee. In fact the greater part of their food was sterilized before it was eaten. In the case of the few articles eaten as non-sterilized food, such as oysters and watercress, they all knew the result. It was a great pity that they did not emphasize the fact that there ought not to be any danger from the sterilization of milk; it would he thought assist a great deal in the economy of the milk supply. He agreed that all other measures should be taken to ensure cleanliness, but it would simplify matters very much if the milk could be taken to central depôts to be sterilized and put into bottles. A great deal of economy would be effected in this way. One might have a month's supply in this way. With regard to the vans of railway companies it would not matter very much whether they were clean or not, if the cans were properly sterilized and perfectly sealed. There were a few people who could not take cows' milk at all. If one or two people could not take sterilized milk, that was no reason why other people should be deprived of it, and the sooner the notion was overthrown the better.

Dr. K. Lutoslawski (Warsaw), speaking as a medical man, a student of sanitary science, and the owner of a large dairy farm in Poland, as well as a consumer, said that it was not a medical question, but a social one. Therefore in dealing with it they should first inquire to whom was the milk supply of importance? The answer was the community at large. Nevertheless he considered that they could not ask for the municipalization of everything. Water, electricity, and gas were proper subjects for municipalization and payment out of the rates, because they were of use to everyone; but milk was not taken by all, and he thought they would have to leave it to those who took it to organize the supply themselves. He thought the correct solution of the matter was to organize the consumers, by means of co-operative societies, to take the supply of milk. It should always be the duty of the Medical Officer of Health to supervise the supply, and it was quite fair that the ratepayer should provide the inspection, and it ought to be forbidden to produce anything unwholesome. He agreed that education of the persons who handled the milk was necessary, but it was as well to realize that no university men would take to milking cows.

Nor would the Medical Officer of Health, although they would all be quite satisfied if he would undertake it. It was not everything to have a pure milk farm, for the main pollution of the milk was not at the farm but between the farm and the consumer. He thought that the Medical Officer of Health should reform the methods of carrying milk in England. It should always go from a clean cow into a clean bottle, and then to the consumer. Whether this was quite practicable he had his doubts, but what certainly ought to be attended to was the improvement of the methods of carrying milk.

The President (Dr. J. F. J. Sykes), thought they ought all to feel very much indebted to Dr. McCleary for having the courage of his own opinions and for giving them such an interesting discussion. He would, however, ask Dr. McCleary to make one little correction in his paper. He did not think that Dr. Newsholme said that the contamination within the home of the consumer was the most important factor, but "an important factor." At all events it had not left that impression on his mind. Dr. McCleary made a very good point in saying that if municipal authorities and their advisers attach so much importance to a pure milk supply, it was their business to get it for the ratepayer. Dr. Lutoslawski put the other view of the question, the organization of the consumer by co-operation, but then a consumer becomes a ratepayer and it came back to the same thing, should they employ the municipal authorities to do it? Undoubtedly it was for the municipal authorities to protect themselves. Whether it would be by creating a municipal control over the whole of the district was quite another matter. He did, however, think that the municipal authority could make an object lesson, and as a rule the ratepayer's money was very well spent in showing them how they could spend their money satisfactorily in their own interests. In the building of houses the municipal authorities had already done a great deal of good. Mr. Sadler had fallen foul of the railway vans. There was no doubt that many of them were very bad, but the vessels they carried were ten times worse. If they went on the continent they would not find the abominable open milk pan that they found in England. He had been bold enough to say some time ago that the milk ought to be carried in a closed can, and he was jumped on by members of his authority, who said it was impossible. He had been round to the depôts, however, and found that some of the large companies were actually sending milk in hermetically sealed cans. He had tried to reason out the peculiar shape of the can in use, and found that it was a survival of the churn, and that was how it used to be carried by the farmer in days gone by. Nowadays the churning of the train made the milk ferment, and the result was that they had to make holes in the top of the can in order to prevent the top being blown off. Then they finished it off with a rim round the top. If they went to the depôts of a morning they would find the milk running over and being carried back again into the pan. He had opened one the other day, and the milk was actually the colour of the table at which he was now sitting. Another thing he found was that there appeared to be a tradition in the milk trade that when a man carried milk he was entitled to help himself to it. At any rate he had seen railway porters, van drivers with dirty hands, dipping their hands into it, simply because the churns were not sealed. That was the secret of the whole thing. As to the vexed question of sterilization. It was not a question as to whether sterilized milk was beneficial or injurious. It was that milk that required to be sterilized was not fit for food, and he thought that Dr. Bond had entirely missed the point. They wanted pure milk, not to be given sewage and to be told that it was sterilized and fit to drink. He used that word sewage advisedly, because the bacteriologist in testing milk to-day adopted the same method as when testing sewage. Humanized milk is all bunkum. They could only humanize milk in one way, and that was by passing it through the woman. Therefore all those ideas were absurd, and they must go back to the original idea of getting a pure milk supply. A London authority should take its courage in both its hands and start a farm, get the best advice it could, and run it on the very best principles regardless of cost, and see if milk could be produced absolutely pure. When they had ascertained that, then they would be able to talk with some degree of certainty as to the best methods to be adopted.

Dr. McCleary in reply to the point raised by Dr. Sykes said that Dr. Newsholme had made the statement referred to in the course of a discussion at the Epidemiological Society in 1903. He was very glad that his paper had been criticized. He wished to provoke a discussion and had succeeded. He had treated the matter as a preventive medicine question; it had other very important aspects no doubt, but he contended that it was not the business of the Medical Officer of Health to deal with those aspects. It was the business of the Medical Officer of Health to stick to his last and to deal with such a matter from the public health point of view. He could not, however, follow Dr. Boobbyer in taking Lord Rosebery as an authority on public health. So far the epidemiology of milk had been mainly directed in pointing out that the present condition of the milk supply was a grave public danger. The Medical Officer of Health had demonstrated the existence of the danger, and the public naturally expected him to indicate a way to remove the danger. He had started from that postulate and had attempted to indicate a way. His point of view might be wrong, but at all events it was a fair and honest attempt to get at close quarters with the subject. As to the cost of milk at 4d. per quart being too dear to use in poor districts, large numbers of poor children were fed on cheap brands of condensed milk and worthless proprietary foods. A baby requires a quart of cow's milk every day, and 2s. 4d. per week meant more than the poor could pay. The problem, briefly stated, was they must not sterilize the milk, but sterilize the implements. They must bear in mind the analogy with aseptic surgery. They sterilized their instruments, their hands and clothing, and that is what they had to do in regard to milk. The problem was essentially one of personal hygiene, but the farmer at the present day had very great difficulty in finding milkers of any sort. How much more difficult would it be to find educated and cleanly milkers? The farmer already had sufficient burdens on his back. The problem was a very difficult one. He had proposed that the municipality should start a working model, and that was what their president had seized upon. A working model that should be an object lesson in the same way as with houses. They should say to the dairy farmer, this is the kind of milk you should supply. There would be very great economy in cartage if the milk were distributed from one centre. He suggested that they should start a working model, which would greatly help them in solving the great problem of improving their milk supply.

On the motion of the President a hearty vote of thanks to Dr. McCleary was carried by acclamation.

A PURE MILK SUPPLY*

By A. J. LAIRD, M.D.,
Medical Officer of Health of the Borough of Crewe.

An outstanding feature in connection with the milk supply of this country is the striking unanimity of opinion which exists among sanitarians with regard to the unsatisfactory methods of its production and manipulation.

Nowhere probably is there less necessity for pointing out the great importance of a pure milk supply than at such a meeting as this. Those whose duty brings them into close touch with cowkeepers and dairymen, know how milk at every step of its passage from the cow to the consumer is loaded with all manner of impurity, bacterial and otherwise.

It will be impossible in the time at my disposal to deal with anything like the whole question of milk supply. I have therefore restricted myself to only one aspect of the problem, *viz.* the practicability of obtaining a naturally pure milk supply. The necessity for such limitation is obvious; not that what I omit is unimportant, but because standing out pre-eminently before all other considerations this is one of far greater importance to the public than all the others combined.

No matter whether it concerns municipal farms or depôts, large trading companies, or only small dairies and cowsheds, the main object to be attained should ever be kept clearly in view—the production of a naturally pure milk.

This may seem a most unnecessary thing to say, but I believe that so far as the ordinary cowkeeper or dairyman is concerned, it is the last thing to receive his attention, if it should enter his mind at all.

In considering this subject one may ask, whether it is beyond the power of the dairyman to produce clean milk. To answer this question one has only to consider what has been done in the way of private enterprise by dairy companies at home and abroad, by milk commissions in the United States, and by private individuals.

The question resolves itself to some extent into what the public have a reasonable right to get, and what may reasonably be expected of the milk producer in order to comply with this. Unfortunately, however, in this matter the public does not realize the necessity for reform that exists, and it is therefore our duty to see that their interests in this respect receive some at least of the attention which they deserve.

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* Read at a Meeting of the North-Western Branch, January 20, 1905.

In spite of the great advances in knowledge of the chemistry and bacteriology of milk, it is a striking fact that the dealers in this important article of diet should show such an absolute ignorance of the proper conditions under which it should be produced. Much attention has of late been directed to the subject, and although it is pretty generally admitted that our milk supplies are anything but satisfactory, energy seems to have been directed not so much, as one might have expected, in the direction of prevention, as in the remedy of evils after they have arisen.

The opinion among the general public seems to be gaining ground, and I believe that it is one for which the medical profession is mainly responsible, that sterilization by boiling is all that is required to make the milk supply all that can be desired.* I think that it ought to be made perfectly clear that this is not so, and that such a measure as boiling in the home or sterilizing in a municipal milk depôt is not the last word on the question, but is only a palliative measure taken under certain circumstances, in order to prevent a greater evil; that it is really only a choice of the lesser evil.

Apart altogether from this, it seems not at all unlikely that the pasteurizing or sterilizing of the milk alters materially its physiological properties and diminishes its value as a food, but this is an aspect of the question into which I do not wish to enter.

It is obvious that the milk supply of large cities and small towns must present many points of variance. In the one the source of production is often a very considerable distance off, while in the latter the milk is produced for local consumption. The dangerous elements of time, railway transit, and passage through the hands of a contractor are thus absent in the smaller towns. The milk passes fairly rapidly, generally within twelve hours, from the producer to the consumer, whereas city milk takes twice or three times as long.

The sanitary condition of cowsheds has been frequently discussed, and the great need for improvement generally admitted. I shall, therefore, content myself with directing your attention to a number of photographs of cowsheds which I have had taken recently. These show, although only in a limited degree, the character of the exteriors of the cowsheds and their surroundings. The photographer found it absolutely impossible to take any of the interiors owing to the want of sufficient light.

Structurally, however, many of the cowsheds are fairly good; the chief trouble does not lie in the character of the building. It is the method in which the business is carried on that calls most urgently for reform. At a visit to one of our best cowsheds, I found the dairy-

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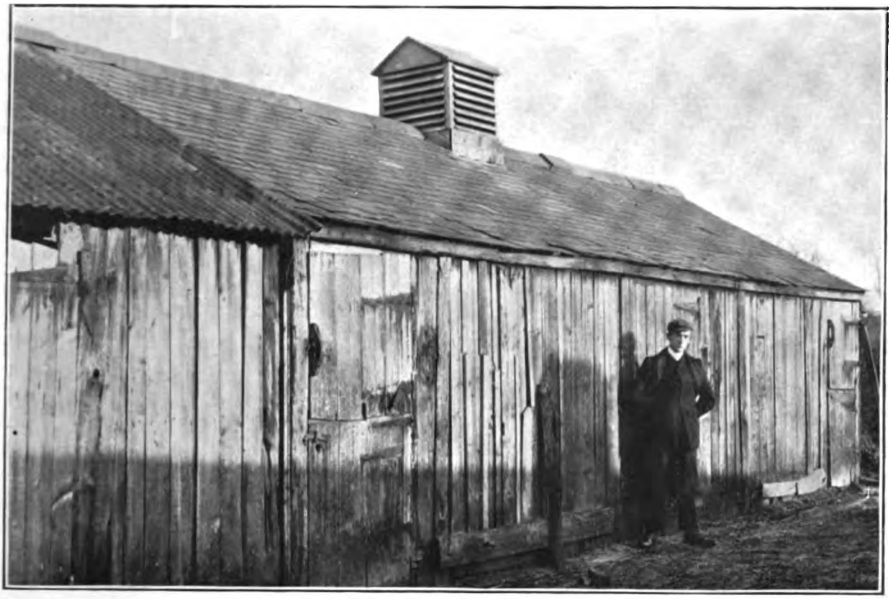
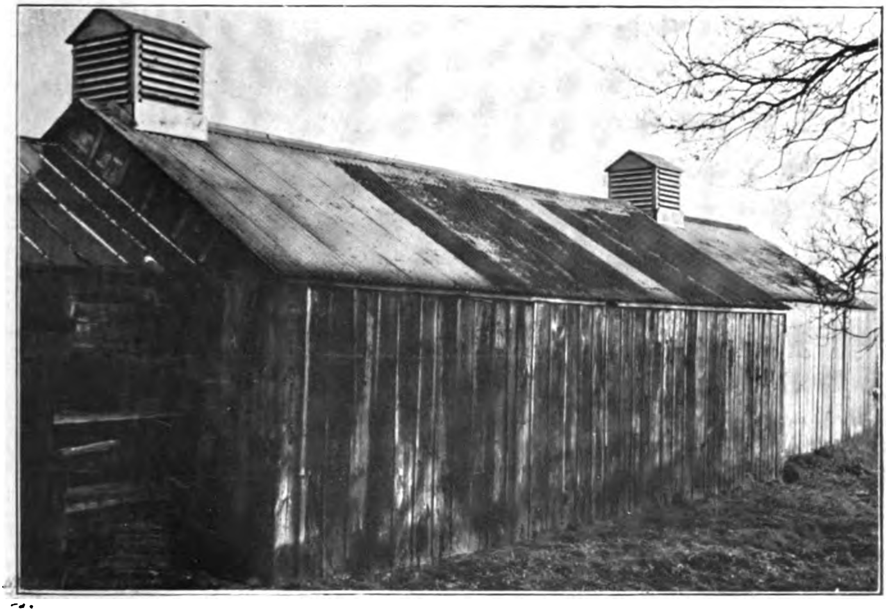
* Vide *Report of Royal Commission on Physical Deterioration*, p. 54 (280).

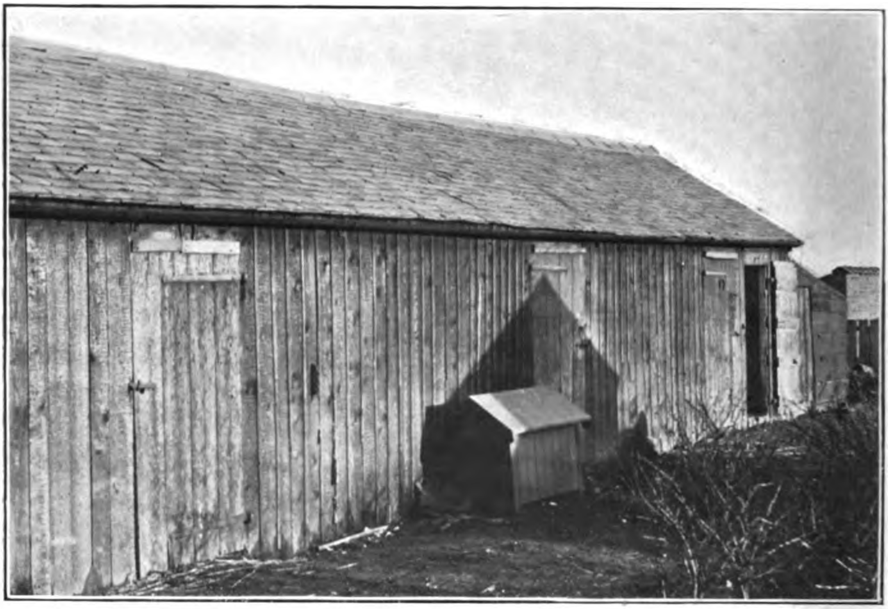


Shed No. 1.—Loose wooden structure, slate roof, wooden ventilator on top. Manure at end of shed.



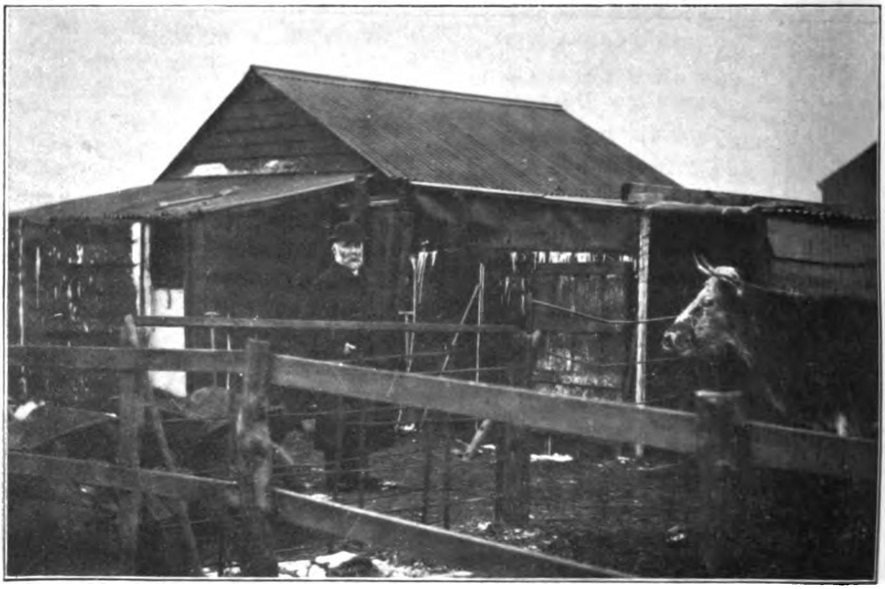
Shed No. 2.—**Built of old railway sleepers; roof partly glazed and partly corrugated iron; two wooden ventilators on top. Cubic space 350 cubic feet per cow. No provision for lighting.**

COWSHED II.



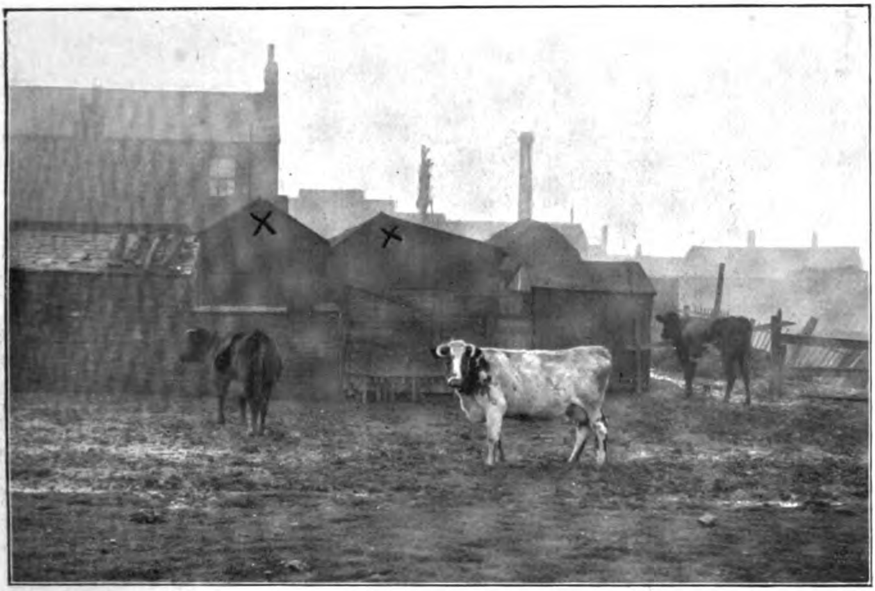
New wooden shed, tiled roof, built to cottage dwelling-house 7 yards away; pig-sty 3 yards away. No lighting or ventilation.

COWSHED III.

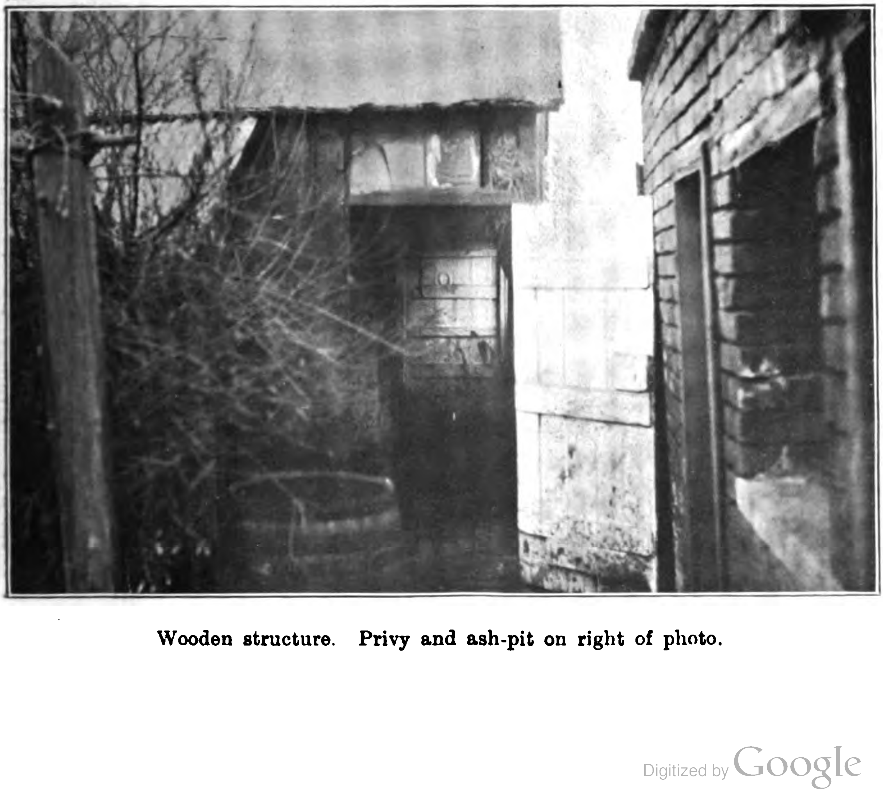


Cowshed about 30 yards from house. Loose wooden structure, corrugated iron roof unlined. Manure 3 yards from shed. No provision for lighting or ventilation.

COWSHED IV.

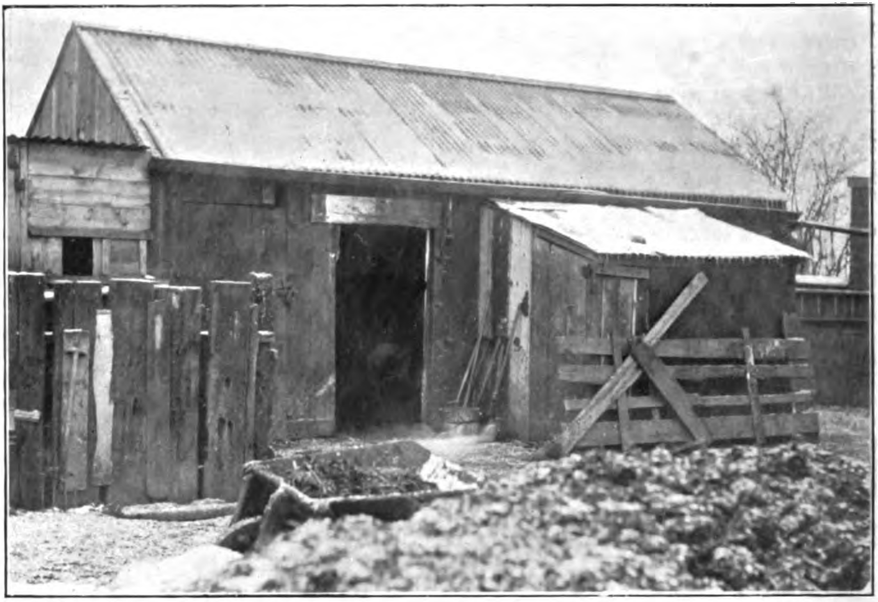


Loose wooden structure, corrugated iron and wood roof. Built adjoining row of cottages, right up to privy and ash-pit.



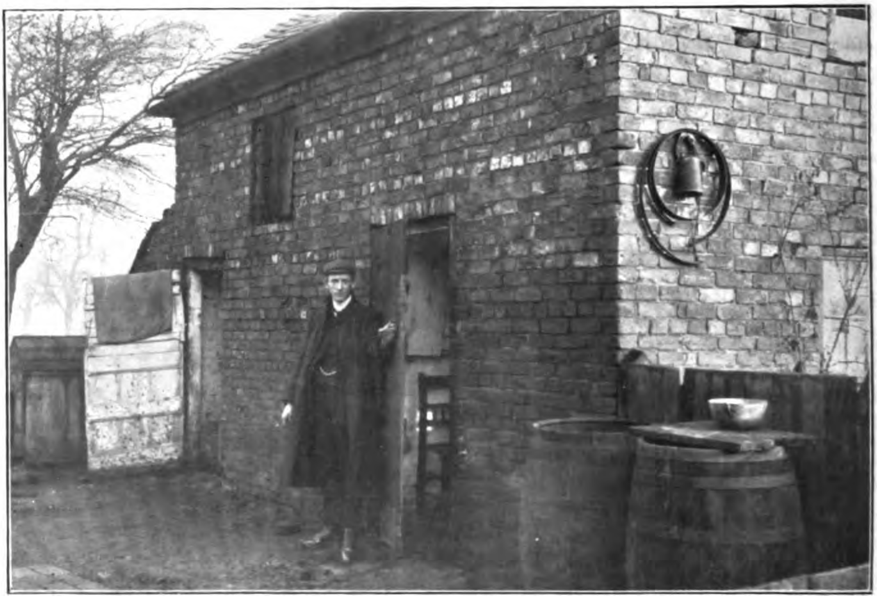
Wooden structure. Privy and ash-pit on right of photo.

COWSHED V.



Cowshed, built at rear of cottage dwelling-house. Wooden structure, unlined corrugated iron roof, adjoining pig-sty. Manure 6 yards away. Ceiling 6 feet high.

COWSHED VI.



Cowshed, built 5 yards from old farm cottage. Old brick structure with wood fittings. Ceiling 6½ feet high. No lighting. 300 cubic feet per cow.

man cleaning out a ditch into which the cesspool overflowed. He came direct from that occupation to the milking without washing his hands. The milk was poured from the pails into a large can which stood on the walk in the cowshed, and was then strained through a coarse cloth which the milkman had proudly shown me, and then folded across his dirty trousers.

In this district grooming and washing the flanks and udders are practically unheard of, while washing the milker's hands or wearing a clean overall during the process of milking are unknown. In only two instances do dairymen own coolers.

Much of the business is in the hands of men who keep only two or three cows and supply their neighbours, while all the shops from which milk is sold do small retail businesses, including the sale (generally from the same counter) of such miscellaneous articles as toys, vegetables, paraffin oil, etc.

The milk vessels are all uncovered, and the milk is removed by means of a dipper, which is then hooked on the inside of the vessel. Such, generally speaking, are the conditions surrounding the production and sale of milk in a small town, although there is much else that is objectionable in the intimate association of the domestic life of the family with the business both of producer and seller.

Bacteriological examination of milk has been made by a number of workers, *e.g.* Swithinbank and Newman,* Park,† Delépine,‡ and others, and has shown the gross contamination that takes place under ordinary circumstances. The good effect of grooming, washing the udders, cleanliness of the milker's hands and clothing, and of cooling the milk to 40° or 45° F. after milking, has also been shown by the same workers, and one naturally asks whether there is really anything extraordinary in this that a dairyman could not do. I think you will agree with me that there is nothing in all this that the ordinary intelligent milk dealer could not do for himself, and, if he will not do it, should be compelled to carry out.

How then does it come about that it is practically never done? The principal reason lies with the milk dealer himself. We are all aware that no class of men regard any change of precedent with more suspicion than the farmer. What was good enough for his grandfather is good enough for him, he says. All this talk about grooming cows, washing udders, etc., is in his opinion so much new-fangled humbug. It would seem that the only way to overcome this conservatism is by compulsion, and it is just here that our weakness becomes most apparent.

The feasibility of any scheme for the improvement of the quality of the milk supply may be more readily gauged by considering what has already been done. So far as I am aware, there is at present no such thing in existence as a municipal milk supply in the same sense that we have a municipal water supply. There are, of course, many places where, for example, the hospital milk supplies are obtained from farms directly under municipal control; but apart from these and sterilized milk depôts, the entire ownership and control of the milk supply to the community is still considered by the majority to be outside the scope of municipal enterprise.

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* *Bacteriology of Milk.* † *Journal of Hygiene*, vol. i. p. 391. ‡ Ibid. vol. iii. p. 79.

As offering a readier means of influencing milk dealers, the granting of annual certificates promises to be of considerable value. This plan was first tried, I believe, in the United States, and is actually in operation in Sunderland, and from the results obtained there it seems worth imitating. The success of this scheme must depend entirely upon the efficiency of the inspection of the farms, and it is one of the main obstacles to its adoption that this would be almost impossible in the case of large cities obtaining their supplies from another district many miles away.

This, however, is only one more reason why the regulations under the Dairies, Cowsheds and Milkshops Orders should be made compulsory, and for the power of granting greater power of control to County Councils over small areas likely to be lax in their administration.

The establishment of municipal depôts for the pasteurization or sterilization of milk is growing rapidly in favour, and is to be commended in so far as the results obtained are immediate. Their sphere of influence is a limited one however, and they do not remove the great need for the improvement of the general supply. Their establishment is a practical admission that the entire food of a portion of the community is in such a dangerous state as to render its sterilization necessary, and that other means to obtain a pure milk supply are inadequate, and have failed to achieve what was expected from them. The opinion of the writer of the articles on the "Milk Supply of Towns," which appeared in the *British Medical Journal* in 1903, is one with which I entirely agree, *viz.* that "The money subscribed by the municipality might more wisely be expended on establishing dairies for the supply of clean, pure, fresh milk, which in this country is all that is necessary, except perhaps during the few weeks of a hot summer (when we get one).

Would it not be sufficient to advise mothers to scald at once, or have the milk scalded at the dairies supplying the poor—sufficient, that is, if the Sanitary Authorities insist upon a reasonable standard of bacterial purity, cooling and cleanliness."

It is, however, to such private enterprises as the great Danish or British dairy companies that we must look for guidance, or to such an example as Mr. Sorensen has shown at York. At present, in England, the production of clean milk is a specialty, and the number of places producing it can be counted on the fingers of one hand. They are large companies or dairies, run on scientific principles by specially trained men. There is at the present time only a very limited demand for pure clean milk, and so long as the public demand the largest possible QUANTITY for their money, trade competition is not likely to result in a milk of the very best QUALITY. It is absolutely necessary, therefore, that societies such as this should state very clearly what is required, and use every possible means at its disposal to obtain it.

The objects to be aimed at are easily defined, *viz.* absolute cleanliness in every detail of the milk business, coupled with immediate cooling and rapid transit. The means by which such ends are to be obtained are many, and will probably not be the same for every locality. According to Professor Delépine,* milk "is usually infected at the farm or in transit," while Dr. Newsholme† believes that infection most commonly takes place at home, "though the filthy conditions under which cows are milked must largely help in the same direction." The conflict of opinion is only apparent, and the whole truth is that at every stage of its passage from the cow to the consumer there is a risk of contamination, the degree of danger differing with varying circumstances in its production, storage, and distribution.

With regard to the reforms which are necessary in the milk trade, the primary need is for the compulsory registration of all purveyors of milk, no matter to whom or in what quantities the milk is sold. The recent enteric fever outbreak near Northwich seems to have had its origin in one of these unregistered dairies, and is one more instance showing the necessity for the removal of Article 6 (6) from the Order of 1885.

Probably an even more necessary step in the improvement of the milk supply is that Article 13 of the same Order should be amended, its permissive nature being removed and the making of regulations made compulsory. From the information supplied to the *British Medical Journal* by the Medical Officers of Health of many counties and combined districts, it would seem that the number of Local Authorities who have not made any regulations at all is very large.

The next great obstacle lies in the laxity of the Local Authorities charged with the carrying out of the dairy regulations. The large Corporations have shown what can be done to improve the milk supply, and generally speaking town cowsheds now are far in advance of those in the country. By the aid of special powers they have influenced to some extent dairymen sending milk in to the cities, but for the rest of the country, the wholesome stimulus which seems necessary is non-existent. If the necessary power of supervision were granted to County Councils, it is more than likely that improvement would soon be made. There would then be a reasonable guarantee that the regulations would be enforced, and a greater uniformity of administration that would remove many difficulties.

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* *Journal of Hygiene*, vol. iii. No 1. † *Public Health*, December, 1899.

The Model regulations themselves require amending. There is a great want of specific detail, each being left to establish his own standards of "sufficiency" or "adequacy" in matters of light, ventilation, cubic space (when the cows are habitually turned out), etc.

This is particularly unfortunate in localities where (as seems to be not uncommon) plans for new dairies and cowsheds are never submitted to the Health Department.

The new regulations of the City of London and Southend-on-Sea, requiring all milk vessels to be provided with suitable covers, are in the right direction. To these might be usefully added regulations prohibiting the use of dippers, and making cooling compulsory.

We know what proportions of the normal constituents of milk should be present, but have no standard to guide us regarding the abnormal constituents which generally are, and never should be, present. The best measure of these foreign matters is undoubtedly the bacterial content, and the establishment of a bacterial standard would prove of the utmost service, and probably be the most powerful lever in checking the wrongful and dirty methods now practised. To obtain the best results it would then be found that absolute cleanliness and immediate cooling of the milk was essential. And if the increase in the bacterial content is to be checked until the milk is delivered to the customer, milkshops will require to show considerable improvement.

There now seems to be no reason why any added contamination of milk should take place during its transit by rail. The Railway Companies Association has stated definitely that any farmer may send his milk in locked churns, and pay on the net weight of the milk. It ought therefore to be made compulsory for all milk to be so sent. It still, however, remains for the railway companies to provide suitable ventilated refrigerating vans for the reception of the milk, and sheds at railway stations where it can be kept while awaiting shipment, without being exposed to the heat of the sun.

I am aware that much I have said may in the opinion of many be practically impossible of attainment, and the means by which the reform in the milk supply is to be achieved open to debate, yet the objects at which we aim are the same—the production of a naturally pure, wholesome milk supply, which shall reach the consumer in that condition.

DISCUSSION.

Dr. Wheatley advocated more inspection and fewer regulations. They were getting so many regulations now that it was extremely difficult to enforce them all. He was strongly of opinion that the trade should be shut out from control in a matter of this kind, although at present such was very far from being the case, and in his opinion the dairies, etc., regulations had been largely nullified by having to be enforced in a large number of districts by farmers, dairy-owners, and the like. Of the two opinions which had been given on the question of contamination of milk, he rather inclined to Dr. Newsholme's view that contamination at the homes of the people was the more potent for mischief, and what lent support to this view in his opinion was that if diarrhœa were due to contamination at the farm why was it not most prevalent in June or July when bacterial life at the farm, was probably most vigorous and therefore the chances of contamination were greater ?

Dr. Greenwood asked the reader of the paper whether in Crewe he had endeavoured to get the farmers to wash the udders and flanks of the cows. In Blackburn, following upon a plan initiated by Dr. Wheatley, he had attempted to have this done, but the farmers strongly objected to it, and stated that it was the cause of mammitis in their cattle.

Dr. Garstang wished to thank the large towns for the manner in which they had, by enforcing the provisions of their private Acts in the country, brought the country farmers more up to the requisite standard. He was perfectly certain that in the strong powers possessed for example by the Corporation of Manchester, country Medical Officers had also given to them a lever by which they could move farmers better than in any other way. He did not think more regulations were required, but some proper method of carrying out the existing regulations without having to rely upon interested bodies of men.

Dr. Buchan said that the town dairymen were entirely in the hands of the farmers, and were actually afraid of them. Even though, as he believed was frequently the case, the weight or quantity of milk was wrong, and the quality of it was bad, the town dairymen dare not complain, for the farmers would immediately tell them they could sell their milk somewhere else, and they would be left without a supply. He agreed with Dr. Laird that a bacterial standard for milk would be an excellent idea.

The President also supported the view taken by Dr. Newsholme that the greater part of the contamination was due to the homes of the people. As one of the best levers to enable one to get proper conditions observed in the handling of milk, he thought he mentioned annual licensing of dairies and cowsheds, the licence to be refused if the dairyman or cow-keeper had not observed the regulations made for his guidance during the previous year. He was also in favour of the Sanitary Authority granting a certificate to farmers who kept their places and their cattle in a really good sanitary condition.

Dr. M. Young was in agreement with Dr. Wheatley that any Council or Committee having to do with the enforcement of dairy regulations, should be, like Licensing Committees, swept clear of all those actively interested in the matter. He thought that further regulations were required, particularly upon one point, namely the cleanliness of vessels, etc., used by persons who simply hawked milk in the streets. As regards the selling of milk in shops where paraffin oil or pickles or vinegar were sold from open or loosely-closed jars, he had been in the habit of prohibiting this under Section 11 of the Dairies, Cowsheds and Milk Shops Order of 1885, relying upon the words "for any purpose incompatible for the proper preservation and cleanliness of milk store, milk vessels, and milk, etc.," and he believed that this was a perfectly proper and fair thing to do.

Dr. Laird agreed in the main with the remarks made by the previous speakers. In Crewe he did not know of any farmer who washed the udders of his cows, but he certainly knew of one man who carefully groomed his cows. In regard to the sale of pickles, etc., he was afraid that if he adopted Dr. Young's attitude it would mean stopping all the milk supply of Crewe that was sold through milk shops. He thanked the meeting for the attention given to his paper.

Dr. Wm. P. Norris has been promoted to be Chairman and chief Medical Inspector of the Board of Public Health of Victoria, rendered vacant by the death of Dr. Gresswell.

Pus and Bacteria in Milk.—In 1900 it was pointed out by Dr. D. H. Bergey that a high cellular and bacterial content of milk appears to be associated with some inflammatory process within the udder. Since then Dr. Bergey (*University of Pennsylvania Medical Bulletin*, July–August, 1904) has studied the milk of several cows during an entire period of lactation in order to obtain information concerning the relation of the period of lactation to the cellular and bacterial content. The milk of one of the cows selected for observation showed, previous to the preceding period of lactation, a slight amount of pus in association with staphylococci. That of cow No. 2, examined for the first time after calving, showed no pus, but merely the normal leucocytic content, which is equivalent to the presence of not more than ten cells per field of a one-twelfth immersion lens. Cow No. 3 was suffering with contagious mammitis, and her milk after calving showed large amounts of yellow pus and very large numbers of streptococci. The milk of all three of these cows was examined at intervals of one or two months, until the close of the period of lactation, a period of nine months. The results of the investigation led to the following conclusions: (1) The occurrence of pus in cows' milk is probably always associated with the presence in the udder of some inflammatory reaction brought about by the presence of some of the ordinary pyogenic bacteria, especially of streptococci; (2) When a cow's udder has once become infected with the pyogenic bacteria, the disease tends to persist for a long time, probably extending over several periods of lactation; (3) Lactation has no causative influence *per se* upon the cellular and bacterial content of cows' milk, although it probably tends toward the aggravation of the disease when the udder is once infected; (4) Contagious mammitis, the "gelbe galt" of European writers, appears to be merely a severe form of mammitis due to a variety of streptococci, which, on account of its chromogenic properties, gives to the milk its peculiar golden-yellow colour.

THE DANGERS OF FAULTILY-CONSTRUCTED MILK-SHOPS.

By WM. ROBERTSON, M.D., D.P.H.,
Medical Officer of Health for Leith.

DIFFERENT writers have recently been denouncing the methods in which the milk traffic of this country is conducted, and many suggestions have been advanced to secure a more cleanly supply; but little attention, if any, has been directed to retail milk-shops. Taking into consideration the fact that the most carefully collected milk may be rendered impure by being exposed in an unsatisfactory milk-shop, the present contribution may serve a useful purpose if it draws attention to a point overlooked in the present controversy. One naturally supposes that specific regulations will effectually control the arrangement and construction of milk-shops. The context will prove that there are occasions when the regulations of a Local Authority may not be worth the paper they are written on.

As an introduction to my subject, let me condense into as few words as possible the history of an outbreak of Scarlet Fever traceable to the supply coming from what I take to be a faultily arranged milk-shop.

With the suddenness characterizing milk infection, cases of scarlet fever came to my knowledge. The cases rapidly increased in number, until at the end of three days it became clear which supply of milk was involved. A visit to the premises showed a milk-shop on a sunk flat. The shop was scrupulously clean, as were all the shelves and utensils. At the rear of the shop, a door gave access to a passage. From the right hand side of the passage were entered a servants' bedroom and the kitchen. The latter was used as a sleeping apartment, and connected with it was a scullery. In the kitchen all the food was cooked and consumed, and in the two stoneware sinks in the scullery milk dishes were washed, as well as many household belongings.

The dwelling-house proper was overhead, its actual entrance being by a door on the street level. An inside stair afforded access to the house from the sunk flat.

When I visited the milk-shop two little children followed their mother from the kitchen, and immediately proceeded to play at hide and seek among the shelves where the flat milk dishes were standing on edge, in anticipation of the milk that was to be placed in them. One of the children had a discharging nose. This raised my suspicions, and before the termination of my visit instructions were left that the two children should be sent to stay at a friend's house. Three days afterwards, both children were notified to be suffering from scarlet fever, and were removed to hospital. At the time of my visit I remarked to the mother that she spoke with a pronounced nasal twang. Examination of her throat proved that her tonsils were red and swollen, but being a victim to periodical sore throat, little more than passing attention was paid to her condition. I had yet to examine the milk-maids, message boys, and the Veterinary Inspector had not given me a report regarding the condition of the dairy stock. It will curtail and simplify matters if I state at this point, that every other evidence was negative save that connected with the mother and two children. With the removal of the children to another house the milk-shop and contiguous rooms were well sprayed with formalin. The milk vessels were treated by steam, and all cloths and towels used in connection with the milk dishes and hands of the workers were burned. Still the notifications continued. At the end of three days, six days after the children left their own house, I stopped the supply of milk from the shop, but permitted the milk to be distributed from the cowshed. The mother's throat was now worse, and I removed her to hospital to keep her two children company. Again the milk-shop was disinfected. At the end of ten days the supply of milk from the shop was resumed. With the removal of the mother to hospital the epidemic suddenly declined. There had been in all over forty cases brought to my knowledge.

The children incubating scarlet fever were, up till the time of their removal to another house, possible factors in the spread of infection ; but when they had been beyond the reach of parental visitations for six days, and the spread of infection increased, I had no doubt as to the mother being the actual diffuser of infection. Both children slept with her and were infected by her, and her sore throat antedated their illness by a week. The diagram (*Fig.* 1), drawn to scale by one of my inspectors, shows the position of the kitchen and servants' room in relation to the milk-shop. In the kitchen a fire was always burning, either to cook food or to maintain a supply of hot water for washing of dishes and milk cans. Rather than nurse her throat in one of the cold rooms upstairs, the mother sought the comfort of the kitchen, and being advised by her medical attendant not to venture out of doors, she allowed the milk-maid who attended to the shop to have her liberty for a few days. During these days the mother served those customers coming to the shop for milk.

Had there been no direct communication between the kitchen and shop, the mother would have been compelled to stay upstairs, or would have been shut off from the milk-shop. The playing of children in an infectious state about the milk-shop would have also been prevented. When remonstrated with for permitting the children to run about the milk-shop, the mother admitted the error, but pointed out that she was alone in the premises, and it was impossible to leave the children in the kitchen where they might fall into mischief.

It is interesting to know that this shop was one of those which had been left alone as a result of the decision, to be presently quoted, which was given against us in the law courts. It is however satisfactory to be able to state that the epidemic of scarlet fever was the lever employed to close the communication between the milk-shops and the living rooms. The dotted line marked A on *Fig.* 1 shows where the passage was built up with bricks, the new scullery being in evidence close to the milk-shop.

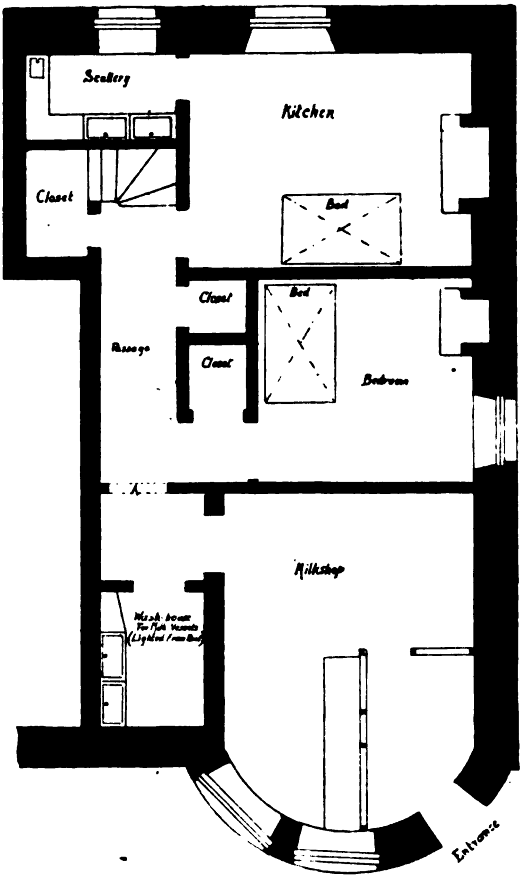

Fig. 1.—At A are shown dotted lines where communication was shut off by a brick partition.

During her five weeks, stay in hospital, the mother showed very slight evidence of desquamation. In fact, only on the sides of her neck could we trace a roughness of the skin. Her case is I think an admirable illustration of the modern type of scarlet fever which often exists in school children, baffling our efforts to localize the cause of minor outbreaks among the scholars of certain departments in our large Board Schools. It is the type known as *Scarlatine fruste.*

To come more directly to the point, I may say that three years ago a crusade was instituted against milk-shops offending against the regulations in force. Out of a total number of 402, only 54 were considered satisfactory in the sense that they conformed with the regulations. In 116 instances the shops communicated with dwelling rooms or sleeping apartments. In 64 cases, rags, green-groceries, including onions, potatoes, leeks, etc., were sold. In 11 instances mangling was carried on. In 157, milk utensils were washed in the kitchen sink along with household apparel, and in other cases water closets communicated directly with the places where milk was stored.

After a few successful prosecutions, satisfactory results began to be achieved. Many of those selling milk in small quantities handed back their certificates, and with the diminution of this class of milk vendor, the presumably adulterated samples of milk taken each month gradually decreased.

It was when we came to put the following clause into operation that difficulties began to confront us.

Clause 12 of the Leith Dairy Regulations reads as follows :—

"*No purveyor of milk, or person selling milk by retail, shall use or occupy any milk-shop, store, or place or premises where milk is stored or exposed for sale, which are in communication in any way by doors, windows, or otherwise with a dwelling room or sleeping apartment.*"

Having again made satisfactory progress as a result of several successful prosecutions, we were proceeding apace, when strenuous opposition met us at the hands of a powerful dairy company. The diagram in *Fig.* 2 represents their premises, and the dotted line indicates where the glass door gave entrance to the shop from the dwelling-house of the resident manager and his family. The risk of contamination was there, and ever present as long as the door afforded every member of the household easy access to the shop. The case was hotly contested on both sides, the result being unsatisfactory to us. It was admitted that the communication was a faulty arrangement. In fact, it was shown that the door had been sealed by a beading of wood all round its edges, this having been done since it was resolved to institute proceedings. Despite the decision favourable to the company, the glass door has remained shut, entrance to the house being now through the common passage at B. The following is the decision, and it considerably arrested our progress until the outbreak of scarlet fever occurred in connection with the first milk-shop already described :—

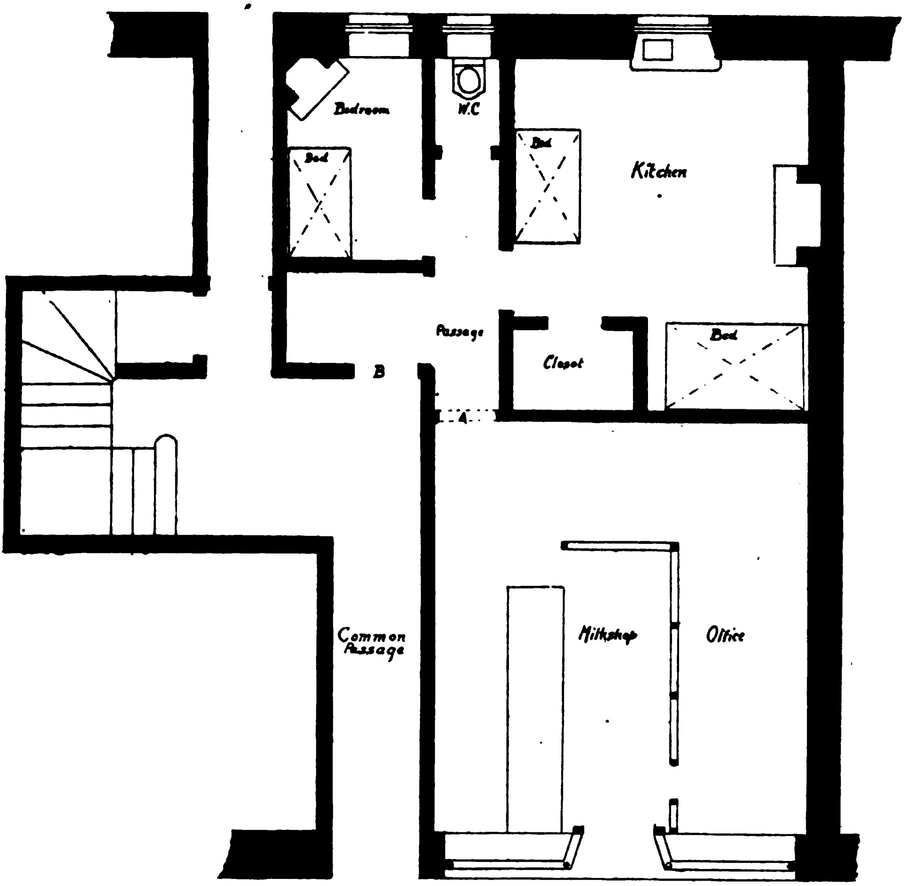

FIG. 2.—Dotted lines show where communication existed.

Decision.—Sheriff Orphoot said: "The charge against the respondents is that they have been guilty of an offence within the meaning of the Orders, Acts of Parliament, and Regulations libelled, in so far as being purveyors of milk, they did use the premises libelled where milk was stored or exposed for sale, which were in communication by doors with dwelling-rooms or sleeping apartments, contrary to Article 12 of the Regulations libelled. Article 12 of these Regulations provides: 'That no purveyor of milk . . . shall use . . . premises where milk is stored or exposed for sale, which are in communication in any way by doors, windows, or otherwise with a dwelling room or sleeping apartment.' The defence is that the premises used by the respondents were not 'in communication in any way by doors, windows, or otherwise with a dwelling room or sleeping apartment.' The premises in question consist of a milk-shop with a doorway to the street, and, at the back of the shop, a door opening into the common passage of a small dwelling-house; off that passage and about six feet from the door opening from the milk-shop, is a door opening into the kitchen of the house, and further along the same passage, and about eleven feet from the door opening from the milk-shop, is a door opening into a bedroom. From these arrangements, it appears that the door opening from the milk-shop into the passage does not directly communicate with dwelling rooms or sleeping apartments, but does communicate with such dwelling rooms or sleeping apartments by means of the passage. The question thus raised is—whether the use of such a milk-shop is a breach of Regulation No. 12 libelled? Now, it is to be observed that while the Regulation prohibits the use of any premises which are in communication in any way by doors, windows, or otherwise with a dwelling room or sleeping apartment, it does not in express terms prohibit the use of premises which are in such communication by means of a 'passage.' It can scarcely be supposed that the framers of that Regulation had not the possibility of a communication by means of a passage in view; and it therefore must be taken, I think, that communication by means of a passage was not meant to be included in the Regulations charged. This is the more likely to have been the case, if the framers of the Regulation had in view to prohibit the use of a milk-shop communicating directly by doors, windows, or otherwise with a dwelling room or sleeping apartment next to it. That arrangement of a dairy—*viz.* a milkshop in front, and behind and next to it, a dwelling room or sleeping apartment—is certainly not uncommon; and openings from the one to the other are also not uncommon. It is such an arrangement which, I think, the Regulation strikes at. No doubt the Regulation prohibits communication in any way by doors, windows, or otherwise, but I read 'in any way' and 'or otherwise,' as having much the same effect, and as meaning, according to the well-known rule of construction, communication with a dwelling room or sleeping apartment by doors, windows, or other apertures, *ejusdem generis*. If this construction be correct, communication by a passage is not covered by Regulation No. 12 If the prohibition includes communication by means of a passage, that would cover a passage from one foot long to one of indefinite length, or even up a staircase. A construction of the Regulation which would lead to such a result is inadmissible. It was argued that in such premises as those in question, milk might get contaminated. This may be possible, but no proof of actual contamination of milk was led, and contamination is not charged. It is to be kept in view, that if communication by a passage be prohibited by this Regulation, a considerable number of dairies in Leith will at once be closed. If that is to be done, I think that should be done by a new Regulation of the Local Authority, and not by a somewhat strained construction of the Regulation charged. The result at which I arrive is, that the use of the premises libelled does not form a contravention of the Reuglation charged, and that the respondents are entitled to a finding of not guilty."

It is not for me to criticize the decision; that would be presumptuous. I venture to think that the Sheriff's conclusion regarding the hardship to other milk purveyors, has no bearing upon the possible danger to health from milk contamination. The scarlet fever outbreak is eloquent answer to that line of reasoning. The hardship inflicted upon many householders is of more far-reaching consequence than the sale of milk from a shop, which, at fractional cost, could be converted into a satisfactory place. Nor is it necessary surely to prove actual contamination, where the possible chances of spreading infectious or any other kind of disease are concerned. If we were to wait until every case of infectious disease had been proved to cause infection, we should never be able to isolate those unsatisfactorily housed. One might continue to argue the various points raised. I have purposely condensed my facts so as to conserve space. The subject is one, deserving serious attention, and the illustrations cited afford strong evidence in favour of enforcing with a firm hand those regulations dealing with the question of properly constructed and equipped milk-shops.

BUILDING BYE-LAWS.—Mr. Long, in replying to a deputation of representatives of trade councils, working men's societies, and others, stated that 266 of the 700 local authorities of England and Wales had not adopted any bye-laws at all. He thought there was great room for improvement in the administration not only of bye-laws, but of other laws by our local authorities.

THE MILK-SUPPLY IN BIRMINGHAM.—A circular letter has been addressed by the Medical Officer of Health to the farmers of the district, pointing out the ways in which contamination occurs and the rapidity of the multiplication of germs in milk. To prevent these mischievous results the farmers are requested to see that more regard is paid to cleanliness by the milkers, and that the milk is stored under such conditions that its temperature will not be higher than 45° F.

THE MILK QUESTION IN BELFAST.—A discussion is taking place in the Belfast papers on this question. A short time ago a public lecture was delivered in which sterilized milk was strongly recommended for infants under one year old, as well as for adults who were weak or who were suffering from diarrhœa, consumption, and wasting diseases; and it was also urged that sterilized milk was required as a food for those attacked with infectious or zymotic fevers. This teaching has raised a storm of opposition on the part of those who contend that sterilized milk—as has been demonstrated both by scientific investigation and by clinical experience—is not merely objectionable, but is often positively dangerous to children owing to its diminished nutritive value. Those who object to sterilized milk say that what is needed is not a method of treating milk like sterilization, which simply palliates effects, does no real good, puts a premium on carelessness and uncleanliness, and tends to retard progress in the right direction; what is wanted, they say, is a really pure, clean milk which is "dairied" and distributed in such a way that the consumer receives the milk just in the same condition as it left the cow. This contention is sound, and must receive the support of those who take a broad view of the problem. Sterilized milk, doubtless, has its uses, but they are much more limited than is contended for by some.

THE ACTION OF FORMALIN ON MILK AND RENNET.*

By DR. ERNST LÖWENSTEIN, Berlin.

The changes which albuminoid bodies undergo when treated by formaldehyde were first described by Blum (1), who epitomizes the results of the "methylene combinations of albumin" as: "absence of coagulation on boiling a solution; great solubility in water; precipitation by acid, concentrated alcohol, or acetone when dissolved by recent addition of water."

Confirmation of this observation was soon made by Bach (2) and Benedicenti (3). The latter specially supplemented it in several directions. He placed gelatin, fibrin, blood serum, casein, and egg albumin for some time in contact with a solution of formalin, and ascertained by titration that a reduction of the quantity of formaldehyde in solution took place, and that the "formaldehyde proteids" were different from the original ones in essential points. Thus gelatin became hardened and insoluble, blood serum, like gall, fibrin and casein lost their power of absorption of fluids, and along with egg albumin became indigestible. He also found that by heating in a current of steam the formaldehyde was split up, and the products regained their original characteristics.

Through v. Behring's proposal to employ formaldehyde as a milk preservative the question, in what way ascertainable by us the albuminous bodies in milk were affected by formalin became acute.

Already, in 1895, J. Rideal (4) and E. J. Bevan (5) had made an attempt to render formalined milk valuable from a hygienic point of view. The latter author made at the same time the interesting statement that formalined milk after some days showed an increase in weight of the dried residue, which apparently depends on the change of milk sugar into galactose, and that at the same time cane sugar appears to change into dextrose. As a matter of fact, later inquirers (Tollens, Lobry de Bruyer, and Ekerstein) have shown that the action of formaldehyde on the constitution of the different sugars is of the greatest importance. Th. Weigle and S. Merkel confirm the statement that preservation of milk can take place by the addition of quantities of formalin which cannot be detected by either taste or smell, but that at the same time the casein of the milk undergoes an alteration. The change is also said by them to be of so fundamental a character that Gerber's method of determining the fat can no longer be used, since the casein cannot be dissolved in the mixture of sulphuric and acetic acids. The digestion by pepsin is not completely stopped, but delayed. The casein of formalined milk falls in thick, voluminous flocculi, for which reason milk which contains this gas should not be used as infants' food.

The activities of formaldehyde as portrayed by Weigle and Merkel were found by Muraközy to be subject to greater limitations. The observations of these authors were confirmed as far as the addition of the larger quantities of formalin were concerned (about 0·5 vol. per cent reckoned as pure aldehyde); but according to this author the amount of formalin necessary for preservative purposes is less than the amount which causes these changes. He makes, however, the extremely interesting observation that the effect of formaldehyde on albuminous bodies increases with the duration of the contact. The question as to how "formaldehyde proteids" behave towards digestive ferments was alluded to by Blum in his first publication.

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According to Benedecenti, as already above remarked, the formaldehyde combination of all albuminous bodies examined by him, among which was casein, were not acted upon either by pepsin or trypsin. Other observers, such as Weigle and Merkel, Mabery and Goldsmith, and Lepierre, have only occupied themselves with peptic digestion, and have found that it was more or less delayed by formaldehyde.

The question has been further studied by Schwartz, under Hofmeister's direction, in the Strassburg Chemico-Physiological Institute, in an extremely thorough and comprehensive fashion. These excellent experimental enquiries showed that in the presence of an excess of formaldehyde trypsin failed to act, but that the activity of pepsin was interfered with, though not completely inhibited. They showed, moreover, that the albuminous preparations (Schwartz employed serum-albumin) in which no free aldehyde was demonstrable showed an almost absolute resistance to trypsin.

As a result of these experiments Schwartz came to the following conclusion:—

"Trypsin digestion is either partially or completely stayed by formaldehyde, and is adversely affected by acetaldehyde. The resisting power of combinations of albumin with aldehydes to tryptic digestion does not depend on this circumstance, since the traces of aldehyde which during the digestion of such preparations gradually become free, do not suffice for total inhibition of tryptic activity. From the fact that peptic digestion is maintained, one may suppose that either the attack on the albumin molecule by the pepsin takes place at a different point from that of trypsin, or that during peptic digestion the hydrochloric acid renders those molecules already occupied by the aldehyde again free by the splitting up of the latter."

Taking this view as a foundation, the present work endeavours to demonstrate the changes which take place in milk as the result of adding those small quantities of formalin which are ordinarily used as a preservative. In preceding work on this subject large quantities of formalin have been exclusively used.

The behaviour of formalined milk towards the rennet ferment offered the shortest way of discovering the changes not demonstrable by chemistry, especially as the statement had already been made by Bliss and Novy that rennet no longer coagulates casein treated with formaldehyde.

For the purpose of this enquiry rennet powder (Witte) was used. This was dissolved in a 10 per cent salt solution, and the 1 per mille solution, after standing for twenty-four hours at room temperature, was filtered; 0·001 ccm. of this clear standard solution sufficed to coagulate 5 ccm. of milk in four hours. The estimation of the rennet, according to Morgenroth's method as employed by Fuld and Korschum, could not from external causes be employed, so the milk tests were simply placed in the incubator. The method of experimenting was as follows: From one sample of the milk to be experimented on a large number of test-tubes were filled, and at the same time mixed with increasing amounts of Schering's formalin. Next, rennet was added, the duration of the contact being varied in the different experiments. Further, each particular dilution of milk and formalin was tested three times, and observations made on the changes which take place by addition of 300, 30, and 3 times the minimal dose of rennet ferment. It may be premised to start with that the quantity of rennet to all appearance was of importance only in so far as it influenced the quickness of the reaction, for only in a few instances did the 300-fold dose of rennet give a more subtle indication of its incomplete action on the casein. The explanation of why the differences of result in the experiments of short duration are so striking, is that the action of the 3-fold dose of rennet made its first appearance in three or four hours, so that in the more concentrated mixtures of formalin the action of the aldehyde takes place before that of the rennet.

Table I.—IMMEDIATE ADDITION OF RENNET FERMENT.

5 cc. of Milk plus Formalin reckoned as pure Aldehyde.	300-fold Minimum Doses of Rennet.			30-fold Minimum Doses of Rennet.			3-fold Minimum Doses of Rennet.		
	1 h.	3 h.	6 h.	1 h.	3 h.	6 h.	1 h.	3 h.	6 h.
1 : 250	0	+?	+?	0	0	0	0	0	0
1 : 500	+?	+		0	+		0	+	
1 : 850	+?	+		+			0	+	
1 : 1250	+			+			0	+	
1 : 2500	+			+			0	+	
1 : 5000	+			+			0	+	
1 : 8500	+			+			0	+	
1 : 12500	+			+			0	+	
1 : 25000	+			+			0	+	
Control I.	+			+			0	+	
„ II.	+			+			0	+	
„ III.	+			+			0	+	

Table II.—RENNET ADDED AFTER TWO HOURS.

5 cc. of Milk plus Formalin reckoned as pure Aldehyde.	300-fold Minimum Doses of Rennet.			30-fold Minimum Doses of Rennet.			3-fold Minimum Doses of Rennet.		
	1 h.	3 h.	6 h.	1 h.	3 h.	6 h.	1 h.	3 h.	6 h.
1 : 250	0	0	0	0	0	0	0	0	0
1 : 500	0	0	0	0	0	0	0	0	0
1 : 850	0	+		0	+		0	0	0
1 : 1250	0	+		0	+		0	0	0
1 : 2500	+			+			0	+	
1 : 5000	+			+			0	+	
1 : 8500	+			+			0	+	
1 : 12500	+			+			0	+	
1 : 25000	+			+			0	+	
Control I.	+			+			0	+	
„ II.	+			+			0	+	
„ III.	+			+			0	+	

Table III.—RENNET ADDED AFTER SIX HOURS.

5 cc. of Milk plus Formalin reckoned as pure Aldehyde.	300-fold Minimum Doses of Rennet.			30-fold Minimum Doses of Rennet.			3-fold Minimum Doses of Rennet.		
	1 h.	3 h.	6 h.	1 h.	3 h.	6 h.	1 h.	3 h.	6 h.
1 : 250	0	0	0	0	0	0	0	0	0
1 : 500	0	0	0	0	0	0	0	0	0
1 : 850	0	0	+	0	0	+	0	0	0
1 : 1250	0	+		0	0	+	0	0	0
1 : 2500	+?	+		0	+		0	0	+
1 : 5000	+			0	+		0	0	+
1 : 8500	+			+			0	+	
1 : 12500	+			+			0	+	
1 : 25000	+			+			0	+	
Control I.	+			+			0	+	
„ II.	+			+			0	+	
„ III.	+			+			0	+	

Table IV.—RENNET ADDED AFTER TWENTY-FOUR HOURS.

5 cc. of Milk plus Formalin reckoned as pure Aldehyde.	300-fold Minimum Doses of Rennet.			30-fold Minimum Doses of Rennet.			3-fold Minimum Doses of Rennet.		
	1 h.	3 h.	6 h.	1 h.	3 h.	6 h.	1 h.	3 h.	6 h.
1 : 250	0	0	0	0	0	0	0	0	0
1 : 500	0	0	0	0	0	0	0	0	0
1 : 850	0	0	0	0	0	0	0	0	0
1 : 1250	0	+?	+	0	+?	+	0	0	+?
1 : 2500	0	+		0	+		0	0	0
1 : 5000	+			+			0	0	0
1 : 8500	+			+			0	+	
1 : 12500	+			+			0	+	
1 : 25000	+			+			0	+	
Control I.	+			+			0	+	
„ II.	+			+			0	+	
„ III.	+			+			0	+	

Table V.—RENNET ADDED AFTER FORTY-EIGHT HOURS.

1 : 250	0	0	0	0	0	0	0	0	0
1 : 500	0	0	0	0	0	0	0	0	0
1 : 850	0	0	0	0	0	0	0	0	0
1 : 1250	0	0	+?	0	0	0	0	0	0
1 : 2500	0	+		0	+		0	+?	+?
1 : 5000	+			0	+		0	0	+?
1 : 8500	+			0	+		0	0	+
1 : 12500	+			+			0	+	
1 : 25000	+			+			0	+	
Control I.	+			+			0	+	
„ II.	+			+			0	+	
„ III.	+			+			0	+	

Table VI.—RENNET ADDED AFTER NINETY-SIX HOURS.

Formalin.	300-fold Minimum Dose of Rennet.			30-fold Minimum Dose of Rennet.			3-fold Minimum Dose of Rennet.		
	1 h.	3 h.	6 h.	1 h.	3 h.	6 h.	1 h.	3 h.	6 h.
1 : 250	0	0	0	0	0	0	0	0	0
1 : 500	0	0	0	0	0	0	0	0	0
1 : 850	0	0	0	0	0	0	0	0	0
1 : 1250	0	0	0	0	0	0	0	0	0
1 : 2500	0	0	0	0	0	0	0	0	0
1 : 5000	0	0	+	0	0	0	0	0	0
1 : 12500 1 : 25000	} spontaneous coagulation.								

If one follows the behaviour of the formalined milk in the experiment with the 3-fold minimum dose, which strength exhibits to the best advantage the more subtle changes in the casein, the results as set forth below take place.

To sum up the results shown in the foregoing tables: The changes which milk undergoes through the addition of formaldehyde are the more far-reaching the longer the action of the formaldehyde continues.

If rennet and formalin are added to the milk at the same time, coagulation sets in at a strength of 1 in 250 (that is, 0·05 ccm. Schering's formalin to 5 ccm. milk). If the rennett is added six hours after the formalin, there is considerable postponement of coagulation; if after twenty-four hours, the coagulation will take place with a dilution of

THE THREE-FOLD MINIMUM DOSE OF RENNET PRODUCES COAGULATION IN FOUR HOURS.

Proportion between Formalin and Milk.	Length of Continuation of Reaction.					
	Immediate Addition of Rennet Ferment.	After 2 h.	After 6 h.	After 24 h.	After 48 h.	After 96 h.
1 : 500	+	0	0	0	0	0
1 : 5000	+	+	+	0	0	0
1 : 8500	+	+	+	+	+	+
1 : 12500	+	+	+	+	+	+

NOTE.—0, signifies no action ; +, signifies reaction ; h, signifies hours.

1 in 1250 ; if after forty-eight hours and ninety-six hours, the same result is obtained with dilutions of 1 in 2500 and 1 in 5000 respectively. Greater dilutions of formalin could not be used in these experiments, since spontaneous clotting of the milk always sets in after from 96 to 120 hours.

In any case the result of these experiments shows *that through a contact lasting four days, even in a proportion of* 1 *in* 5000 *formalin, the milk is so altered that it no longer reacts to rennet.*

There is no doubt also that during the continuance of the contact of formalin and milk the changes in the constitution of the milk-albumin progress. No great weight can therefore be attributed to the view that possibly the absence of coagulation can be referred to the alteration of the rennet ferment by the formaldehyde. The above experiments justify the view expressed here.

Freudenreich has already pointed out in his work entitled "Contributions to our knowledge of Rennet" that in order to sterilize this ferment a 1 per cent solution of formaldehyde is necessary, and that even this amount does not produce any essential weakening of its activity. My own observations have shown that rennet ferment is extraordinarily resistant to formalin. One ccm. of the above-mentioned standard solution (of rennet) was mixed with undiluted quantities of formalin and five tests made :—

1.—1 ccm. rennet solution + 1 ccm. formalin
2. " " " + 0·5 " "
3. " " " + 0·3 " "
4. " " " + 0·2 " "
5. " " " + 0·1 " "

The fermentative value of the rennet was estimated by titration after each single test of eight, twenty-four, and seventy-two hours' duration respectively by further diluting 0·1 ccm. the original mixture (Stamm-eprouvette). This showed that even after seventy-two hours in experiment No. 2 (*viz.* 1 ccm. rennet and 0·5 ccm. formalin) the rennet suffered practically no loss of activity.

On the other hand, the fermentative action is completely arrested when rennet powder is exposed for long to an atmosphere of formaldehyde. This striking result, which E. Freudenreich published in 1898, rests on a sure footing, for 1 gram of Witte's rennet powder was exposed for twenty-four hours in a glass bell-jar to an atmosphere of formaldehyde. The dry powder became moist, crumbling, and adherent to the jar; then 0·1 gram of this was dissolved in 100 ccms. of a 10 per cent salt solution (solution taking place readily), and it was found that this solution had lost all fermentative activity.

As regards the other ferment, one may mention the experiments of C. L. Bliss and F. S. Novy, which show according to their statements that papain is easily, but trypsin and amylopsin with difficulty, disturbed by formaldehyde.

The latter ferments bear weak solutions of formaldehyde at room-temperature, but are much more sensitive to it at 40° C. Pepsin and diastase, on the contrary, can resist the action of 5 per cent formaldehyde for weeks without loss of activity.

While solutions of diastase without formaldehyde become neutralized by the action of bacteria, the action of the enzyme is said to continue in the presence of these by the addition of formalin.

S. Sawamura questioned these observations, for he found the activity of a commercial pepsin preparation which was put for twenty-four hours in a 10 per cent formaldehyde solution completely destroyed. The different results of these enquirers and like statements made by Pekelharing led Sawamura to the conclusion that these authors had employed diluted formaldehyde and allowed these to work on the pepsin, not in a neutral solution, but in one free from salt.

To settle the question whether the activity of a ferment is disturbed by formaldehyde it is recommended to allow the formaldehyde to act in gas form, since in this way disturbing factors are excluded. The incongruence in the results of the experiments of the employment of formalin in gas and in solution. on pepsin, demands that similar experiments should be conducted with other ferments. In this way can the existing uncertainties be set at rest.

CONCLUSIONS.

1. Formaldehyde so alters the milk that it no longer reacts towards rennet. The degree of alteration depends, first, on the length of contact, and, secondly, on the strength of the formalin solution.

2. These changes in the milk take place with the small quantities of formalin which are used in practice for preservation.

3. Formaldehyde in solution does not rob the salt solution of rennet of its activity, while formaldehyde in gas form does this.

P.S.—The author mentions that Dr. Monckton Copeman attributed an epidemic skin disease in Hendon Hospital to formalined milk.

THE POLLUTION OF THE RIVER ISAR.—The view of Professor Pettenkofer and his colleagues that, in consequence of the effects of self-purification, the river Isar is capable of dealing with the whole of the sewage of Munich, is controverted by Professor Hofer, and it is stated in the *Gesundheits-Ingenieur* that the results of extensive sewage pollution may now be traced as far below Munich as the junction of the Isar with the Danube, a distance of upwards of sixty miles. Both the discolouration and the turbidity of the river water have become greatly increased during recent years, and vast banks of mud and sediment have been formed in the river bed. Bacteriological tests have shown that a certain amount of improvement in the quality of the water, due probably to self-purification, is apparent, but the analyses indicate that the bacteria do not, as supposed, lead to the mineralization of the organic matter in solution. Quite the contrary is, in fact, the case, and enormous growths of fungi are found all down the stream, while the bed of the river has undergone an amazing change.

THE EFFECT OF THE WEATHER UPON THE QUALITY OF MILK, AND THE USE OF PRESERVATIVES.*

By BERNARD DYER, F.I.C.,
District Agricultural Analyst and Joint Public Analyst for the County of Essex;

T. S. DYMOND, F.I.C.,
Lecturer on Chemistry to the Education Committee of the Essex County Council; and

J. C. THRESH, M.D., F.I.C.,
Medical Officer of Health for the County of Essex, and Lecturer on Public Health in the London Hospital Medical College.

With regard to the question as to the effect of wet and dry weather respectively on the quality of milk, we have considered the results, furnished by one of us, of analyses of between 1,100 and 1,200 samples of milk taken within the county under the Sale of Food and Drugs Act during the past three years, comparing them month by month with the rainfall records during the same period.

Although the average richness of the milk in different years and at different periods of the year shows considerable variations, the average results are always very much above the limits of the Board of Agriculture; and, whatever may be the case with individual cows, the results of the analyses we have considered afford no evidence that either excessively dry or excessively wet weather produces any such influence upon the mixed milk which finds its way into public consumption as to render the Board of Agriculture limits unfair or onerous to the farmer.

The Board of Agriculture limits are, as is well known, 3 per cent for fat and 8·5 per cent for non-fatty solids. It is rarely that the monthly averages fall to anything like 3·5 per cent of fat and 8·7 per cent of non-fatty solids. Indeed the whole average is nearer to 4 per cent for fat and 9 per cent for non-fatty solids than to the legal limits.

The whole question of the natural influences which operate to cause variations in the quality of milk was very fully considered by the Departmental Committee of the Board of Agriculture which sat in 1900, and has already been taken into account by the Board of Agriculture in framing its Sale of Milk Regulations of 1901, laying down the limits of 3 per cent for fat and 8·5 per cent for non-fatty solids. Indeed, the majority of the Departmental Committee, as is well known, recommended even a higher limit for fat, namely, 3·25 per cent, and the lower limit of 3 per cent finally adopted may be regarded as specially designed to protect the farmer from any difficulty or injustice that might arise through what may be looked upon as natural variations.

We are unanimously of opinion that it is to the interest of the farmer as well as of the consumer that the regulations of the Board of Agriculture should be regularly and uniformly enforced, in order that dealers and distributors may not be open to a temptation stronger than that which even the existing limits afford, to adulterate either with water or with liberal additions of separated milk; the effect of adulteration obviously being not merely to injure the ultimate purchaser, but also to lessen the wholesale demand upon the farmer for the genuine product of his industry.

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* A Report to the Essex County Council, November, 1904.

Preservatives.—The question of preservatives was fully considered by a Departmental Committee of the Local Government Board appointed in 1899. As the result of its enquiry, that Committee recommended that boracic acid preservative, provided the admixture were duly notified by label, might be allowed to be mixed in cream to a limited extent, namely, not exceeding ¼ per cent; and in butter, without notice by label, to a somewhat larger extent, namely, up to ½ per cent, but not more; but that no other kind of preservative should be used with either cream or butter. It was also recommended that in the case of all dietetic preparations intended for the use of invalids or infants, chemical preservatives of all kinds should be prohibited; and it was especially recommended that the use of any preservative whatever in milk should be constituted an offence under the Sale of Food and Drugs Act.

The subjects covered by these recommendations have naturally been a good deal before us from our various points of view.

The two of us who are more particularly engaged in the consideration of agricultural matters are of opinion that, under the conditions of modern dairying, with proper cooling appliances and with due regard to cleanliness, the use of preservatives in milk is unnecessary and undesirable, and is to be condemned.

The other of us, who is especially concerned with the public health, and who views the matter from a medical standpoint, is further of opinion that any preservative is objectionable where infants are concerned, and that, therefore, preservatives should be strictly excluded from milk.

We are thus all agreed in endorsing the recommendation of the Departmental Committee on Food Preservatives with regard to milk.

But a short time since, a sample of milk drawn under the Sale of Food and Drugs Act in the county was found to contain as much as 24 grains of boric acid per pint, and, although such heavy quantities as this are happily of exceptional occurrence, a considerable number of the samples of milk taken under the Sale of Food and Drugs Act within the county are found to contain this preservative in varying quantities. We are all distinctly of opinion that milk containing boric acid, formalin, or any other preservative is to be regarded as not of the nature, substance, and quality of genuine milk, and that cases of its sale should be dealt with accordingly.

The recommendations of the Departmental Committee in reference to the quantities of preservatives to be regarded as admissible in other dairy products, should in our opinion not be exceeded.

The Third Plague Outbreak at Sydney.—From the report of the Sydney Board of Health on the third outbreak of plague in that city we learn that for nearly a year a rat staff was continuously at work exterminating thousands of rats, all of which were examined in the laboratory. At the end of ten months one rat was found to be affected by bubonic plague, and prompt and stringent measures were taken to prevent infection being conveyed from the quarters where the rat was found. By thus adopting precautionary measures at the earliest possible opportunity, the authorities were enabled to prevent what might otherwise have proved an extensive and disastrous epidemic.

PARLIAMENTARY NOTES.

THERE does not appear to be any chance for Bills dealing with Public Health matters to be discussed during the present session, as members responsible for their introduction have not been successful in securing good places in the ballot.

MEDICAL INSPECTION IN PUBLIC ELEMENTARY SCHOOLS.—Replying to Sir J. Gorst, who asked, on March 8th, whether a provision will be inserted in the new Code making the payment of Parliamentary grants to public elementary schools conditional upon the Board of Education being satisfied by medical inspection or otherwise that the children in respect of whom the grant is made are physically fit to receive the instruction for which the grant is paid, Sir W. Anson says: It is extremely doubtful if the Board have the legal power to require the medical inspection of children in public elementary schools. Even if they do possess such power, the right hon. member hardly seems to have realized what the effect of their putting it into operation would be. The organization of any such system as is suggested in the question must take some time to complete, and in the meanwhile the public elementary schools throughout the country would be deprived of Government grant. The Board do not propose to insert any such provision in the new Code.

PHYSICAL DETERIORATION.—A series of questions were put on Feb. 27th to Ministers by Sir John Gorst to elicit the intentions of the Home Office, the Local Government Board, and the Education Department with respect to the recommendations of the Committee on Physical Deterioration.

Mr. Akers-Douglas said that he feared he could not undertake to answer in detail as to those of the Committee's proposals in which his Department was concerned. Some of these proposals appeared to be put forward as suggestions for further consideration rather than as definite recommendations, and he could not take steps to give effect to them without first collecting more information than had been obtained by the Committee. Perhaps he might be allowed to say, briefly, that the Committee's recommendations, several of which were engaging his attention, would not be lost sight of. The important subject of defective children, to which the Committee referred in recommendation No. 53, was now under the consideration of a Royal Commission.

Mr. Long said that the recommendations made by the Committee were very numerous, and so far as they related to matters within the province of his Department effect could not be given to many of them without legislation. A Committee which he had appointed after consultation with the Home Secretary was inquiring into one important matter referred to by the Committee, namely, vagrancy.

The question of the regulation of milk supplies in towns, which is extremely difficult and involved, is under consideration, as well as other subjects referred to in the report.

Sir W. Anson said that the recommendations which would appear to fall within the existing administrative powers of the Board of Education were recommendations 17, 18, 20, 37. The Board had had under their consideration for some time the subjects of these recommendations, and had taken, and were taking, steps which they hoped might be of some practical utility on the lines indicated in the report. They are also taking steps, so far as legislation was not involved, to give some effect to recommendation 35.

Sewage Disposal Commission.—It is impossible at present to state with any degree of precision when the Royal Commission on Sewage Disposal will be in a position to make a final report upon the questions submitted to them, some of which can only be properly determined after careful and prolonged scientific research. The systematic investigation of a number of artificial processes of purifying sewage, in order to ascertain their relative value in different circumstances, is, however, making good progress, and it is hoped to issue a report on this subject within the next six months.

Municipal Milk Depôts.—Mr. Thomas Lough has introduced a Bill to allow metropolitan boroughs to establish and maintain milk depôts.

The Police and Sanitary Committee, to which all private Bills promoted by municipal and other local authorities dealing with powers relating to police or sanitary regulations are referred, will consist of Captain Balfour, Mr. Bill, Mr. Graham, Mr. Corrie Grant, Mr. Leyland-Barratt, Mr. Lowe, Mr. Pemberton, Mr. Luke White, Mr. Whitley, Mr. John Wilson (Glasgow), and Mr. T. W. Wilson (Worcestershire).

Re-vaccination of Children.—In reply to the Duke of Northumberland, Lord Kenyon said that the Government relied on the report of the Royal Commission of 1896, which stated that compulsory re-vaccination was not practicable. The Commissioners thought that there were practical difficulties in the way. Possibly these difficulties might have been overcome in Germany, but they did not see their way to overcome them in this country, and they were afraid that compulsion would encourage greater hostility here to re-vaccination. The Government had considered the practicability of bringing in a Bill, and they had come to the conclusion that it was not possible to do so. He contended that the figures of small-pox showed a gradual diminution of cases since the Act of 1898, and the Government hoped that this diminution might continue until small-pox had almost died out of the land. But as long as the conscientious objector was allowed to exist—and they did not see how they could get rid of him—it was impossible to introduce a Bill dealing fully and completely with vaccination and re-vaccination. On behalf of the Government, therefore, his reply must be in the negative.

Medical Inspection of School Children and Provision of Meals.—An inter-departmental committee has been appointed (9th March): (1) To ascertain and report on what is now being done, and with what result, in respect of medical inspection of children in public elementary schools; (2) And, further, to inquire into the methods employed, the sums expended, and the relief given by various voluntary agencies for the provision of meals for children at public elementary schools, and to report whether relief of this character could be better organized, without any charge upon public funds, both generally and with special regard to children who, though not defective, are from mal-nutrition below the normal standard: Mr. H. W. Simpkinson, C.B., Assistant Secretary Board of Education, chairman; Mr. H. Franklin Parsons, M.D., Assistant Medical Officer Local Government Board; Mr. C. Jackson, Chief Inspector of Elementary Schools; the Hon. Maude Lawrence, Chief Woman Inspector of the Board of Education; Mr. R. Walrond, Senior Examiner; with Mr. E. H. Pelham, Junior Examiner Board of Education, as secretary.

VENTILATION OF THE HOUSE OF COMMONS.

A Select Committee having made certain recommendations as to improvements in the methods of heating and ventilation, opportunity was taken during the recent recess to carry out as many of them as possible.

Formerly the air required for the House was caught by an intake at the front of the terrace overlooking the Thames, and passed to an engine-driven input fan of a type which would be considered obsolete nowadays Thence it was sent through dry scrim-cloth screens into the heating chamber, where it was raised to a temperature of 62° before finding its way into the debating chamber. Foul air was extracted at the ceiling level, partly by means of large argand gas-burners, partly by a heat upcast to the clock tower, and partly by another heat upcast *via* the Commons' lobby shaft, the two latter exhaust pulls being actuated by coke fires upon open grids.

That system has now been completely superseded. The old engine-driven fan having been displaced as altogether inadequate, a much more powerful and improved electrically-driven fan has been installed, while washing screens of new type have been provided at the terrace air inlets. Special attention has been given to the doorways along the air passage, with a view to the prevention of side leakage, and surface impurities on the walls are to be guarded against by periodical lime-whiting. Under the new arrangements air can be delivered into the debating chamber at a velocity which will be quite inappreciable to members. Not only will the air be frequently changed during a sitting, but when the House is cleared for an adjournment a change will be effected at a higher velocity, so that members may return to a comparatively fresh chamber. Extraction from the lobby is to be effected henceforth by a powerful electrically-driven fan instead of by fire-heat upcast. Much of the dust trouble has been eliminated by the introduction of the vacuum system of cleaning within the chamber and its precincts. Under the old regime it was not uncommon to remove 50lb. of dust per week, but the average has now fallen to a tenth of that quantity. Investigations, conducted by Dr. M. H. Gordon, with the assistance of Dr. W. H. Huntley and Dr. J. Aitken, have been of great value in determining the conditions which obtained prior to the improvements, and these observations are to be continued.

REPORT OF THE VACCINATION EXPENSES COMMITTEE.

We understand that the Vaccination Expenses Committee (presided over by Mr. Llewellyn, M.P.) appointed by the Local Government Board in September, 1903, have arrived at the conclusion that the remuneration of vaccination officers for primary vaccination since the Act of 1898 came into operation has, in many cases, not been excessive, particularly in country districts. At the same time, they believe that the fees paid for primary vaccination might be reduced without any diminution in the efficiency which has been attained under the present system, and without any injustice to the public vaccinators, if the provisions of the vaccination order were made more elastic. The extent of a parent's power to require the attendance at his home of a public vaccinator to vaccinate his child at the cost of the rates might, the Committee think, without hardship be considerably curtailed. They adopt the view that if a parent does not call in the public vaccinator (as he may do) before the child is four months of age, and does not have the child vaccinated when the public vaccinator makes, after notice, his statutory visit to the child's home to offer to vaccinate the child, the parent should not be entitled to have the child vaccinated at his home free of cost unless the operation has been postponed by the public vaccinator. If the parent afterwards desires to have his child vaccinated at the public cost he should be required to take the child to the public vaccinator's surgery or other appointed place. The Committee hold that the primary vaccination of a child over the age of one year should not be obligatory at the home of such child, and that such lower *minimum* fee as may be prescribed in respect of vaccination elsewhere than at home should be payable. They further recommend such an alteration in the present system as would give public vaccinators an opportunity of arranging their visits to the homes of children when they have other professional work in the neighbourhood; and they suggest the substitution of four weeks for two weeks as the term during which the public vaccinator should be required to visit the home of the child after the receipt of the parent's request or of the notice sent by the vaccination officer.

The Committee state that, in their opinion, the *maximum* fees may be fairly and reasonably fixed at the following amounts: 2s. 6d. for every case of successful primary vaccination performed elsewhere than at the home of the child or person vaccinated; 3s. for every case of primary vaccination performed at the home of the child within one mile from the public vaccinator's residence; 4s. for every case of successful primary vaccination performed at the home of the child over one mile and under two miles from the public vaccinator's residence; and 5s. for every case of successful primary vaccination performed at the home of the child over two miles from such residence. Where journeys of over three miles have to be made a special fee should be arranged between the authorities. In advising these fees the Committee have borne in mind the average district where no unusual difficulties are likely to arise, and where no opposition exists on the part of the parents to allow their children to be vaccinated in accordance with the law.

The recommendation referred to in the preceding paragraph is, the Committee say, made on the understanding that the fee system of payment is to be continued; but they submit that a change in this system might, in many districts, be made. In districts where there is sufficient public vaccination to occupy the whole time of a medical man the Committee think that the guardians should be empowered to appoint a whole-time permanent public vaccinator at a salary to be agreed upon between him and them with the approval of the Local Government Board, the department being empowered in such case to sanction an increase in salary if, in their opinion, the amount offered by the guardians is insufficient. In other districts it might be possible to associate the work with that of the District Medical Officer or Medical Officer of Health at an agreed salary. In ordinary circumstances the Committee think that re-vaccination should be done only at appointed stations or at the surgeries of the public vaccinators. No change is recommended in the mode of remuneration of vaccination officers or in the *minimum* fees to be paid to them in districts where there is no serious opposition to the enforcement of the Vaccination Act; but where there is such opposition they propose that the fees of these officers should be fixed at such an amount as would give them approximately the same remuneration as they would receive in a similar district where opposition to vaccination did not prevail; and that if in such districts in any year, after diligently performing their duties, the vaccination officers are, in the opinion of the Local Government Board, insufficiently paid for their work, the department should be empowered to increase the amount of their fees or to prescribe a salary for the office.

VACCINATION UNDER RED LIGHT.—C. Rösler reports in regard to the favourable result of vaccination under red light (*Wiener Klinische Wochenschrift*, xvii. 47): A group of 250 soldiers were vaccinated as usual by daylight. The spot was then dressed with four layers of gauze dyed red with cochineal, covered with a protecting shield of red gelatin, and the whole fastened with a single thickness of cotton also dyed red. Another group of 42 men were vaccinated, and the spot was protected with the same shields and outer dressing, without the gauze inside. Another group of about 250 men were vaccinated at the same time, and no dressings applied. The results demonstrate in his opinion that the pustule runs a typical course under the red light, but that it is much milder than usual, and all complications are avoided. He was encouraged by the results observed to treat two severe horse bites on the arm by exposure to red light. A red gelatine shield was placed over the wound, and left exposed when the arm was dressed. The patients lay in beds near a window, the red window in their dressings turned to the light and exposed to direct sunlight for an hour daily. The wounds healed remarkably quickly. It seemed as if the red light checked the growth and activity of pyogenic cocci.

IMPORTATION OF PORK FROM DENMARK AND HOLLAND.—The Danish Minister of Agriculture has issued an order to the Government Veterinary Inspectors that no carcase of any pig is to be exported to Great Britain in which, or in the organs of which, is found the smallest deposit of a tuberculous nature; and that, as the removal of any part of the serous membranes causes a suspicion in England that the animal has suffered from tuberculosis, the Inspectors must not pass for export any carcase of an ox or a pig from which any part of the pleura or peritoneum has been removed. The Danish Government has further ordered that carcases of pigs must not be passed for export before they are quite cold, and in that state have been found perfectly firm and dry, and that carcases of rickety pigs must not be passed for export. In the Netherlands meat for export may be inspected by competent veterinary surgeons and, if approved, a label is attached to each carcase. Market and other Inspectors in this country should see that: (1) The labels are properly attached; (2) They take the labels from the carcases themselves when they seize the meat and have them handed to them by the butchers; the labels from condemned carcases should be sent to the Consulate General for the Netherlands, 4, Coleman Street, London, E.C., so that enquiries may be made at the place of origin. At present about 80 per cent of all the meat exported from Holland bears the Government label. The label should be attached by wires clamped with a lead disc bearing the letters "U.K." The Danish label is similarly affixed, the seal bearing a crest and crown, and on the obverse a star and number.

LAW REPORTS.

HIGH COURT OF JUSTICE:

COURT OF APPEAL.

February 24th, 1905.

BEFORE HENN COLLINS, M.R., MATHEW, AND COZENS HARDY, L.JJ.

FROST *v.* AYLESBURY DAIRY COMPANY, LTD.

Infected Milk—Sale of—Breach of Warranty—Damages.

When milk is sold by a dairy company for consumption as food there is an implied warranty on the part of the vendors that it is reasonably fit for that purpose, and they will be held liable for damages caused by reason of its being infected, although such infection was latent and not discoverable by ordinary care and skill.

This was an appeal by the defendants asking for a new trial or judgment in an action tried before GRANTHAM, J., and a special jury, and reported in *Public Health*, xvii. p. 260, where the facts are set out. The action was brought by the plaintiff to recover damages owing to the illness and death of his wife from typhoid fever, caused, as he alleged, by the milk which was supplied to him by the defendants being contaminated with the germs of typhoid fever. The jury found a verdict for the plaintiff for £106, the expenses to which the plaintiff had been put in consequence of the illness and death of his wife; and judgment was entered for him accordingly.

Macmorran, K.C., and *W. Mackenzie* appeared for the defendants, and contended that under Section 14 (1) of the Sale of Foods Act, 1893, the defendants did not impliedly warrant that the milk was free from infection, as no care and skill on their part could have discovered whether it was infected or not. They also contended that the verdict was against the weight of the evidence, and that the Judge at the trial had misdirected the jury and introduced topics of prejudice against the defendants.

Duke, K.C., and *Holman Gregory*, for the plaintiff, were not called upon, and the Court dismissed the appeal.

The Master of the Rolls said that the first point taken was that, admitting that the milk was the cause of the typhoid fever, upon the facts of the case there was no actionable wrong on the part of the defendants. The question was whether, in the particular circumstances, the case had been brought within Section 14, Sub-section 1, of the Sale of Goods Act, 1893. It was [illegible] wn

so

ot

Page 464, the 8th line from bottom should read

"and not have them handed to them by the butchers;"

[illegible]

contract for the supply of an article of food—namely, milk. Th

for which the milk was supplied was obviously for consumpti

article of food. It did not require any evidence to prove the p

purpose for which the milk was supplied. The jury must be have found that. Where was the condition so as to show that the buyer relied on the seller's skill or judgment fulfilled? If any seller ever did inform the mind of a buyer of his special care as a seller, as an inducement to the would-be buyer to deal with him, those defendants did. The book which had been called the pass-book, which was supplied to the plaintiff, was full of particulars of their skill and knowledge in the matter. It contained paragraphs headed "Milk in relation to tuberculosis and other diseases"—stating the precautions taken to ensure that only pure milk free from all germs of disease and free from adulteration was supplied. One paragraph related to "medical inspection," another to "milk analysis," another to "veterinary surgeon." The buyer could not escape being permeated with the sense that he was secured against the possibility of danger if he bought the defendants' milk. Milk, therefore, for the supply of the plaintiff and his family was tendered by a seller with all this knowledge and skill. It was then said that the buyer could not rely upon the sellers' skill or judgment in a case where no skill or judgment could have found out the defect. That was a contention that a person could not become liable for an undiscoverable latent defect. The law upon the point was the same now as it was at common law before the Sale of Goods Act, 1893. That point had been dealt with and decided by the Court of Appeal in *Randall* v. *Newson* (2 Q.B.D., 102), where it was held that on the sale of an article for a specific purpose there was a warranty by the vendor that it was reasonably fit for the purpose, and that there was no exception as to latent undiscoverable defects. Then, with regard to the alleged misdirection, it was a well-established rule that, even if there was misdirection, still if that misdirection did not affect the result of the trial, the Court would not be justified in sending the case down for a new trial. Mr. Macmorran complained, and he (the Master of the Rolls) must admit with some justice, that the learned Judge made some observations about the name of the defendant company, though that had nothing to do with the case; and he thought that it was unfortunate that the learned Judge had made those observations. In his (the Master of the Rolls') opinion there was not the shadow of a foundation for any aspersion on the defendants in connection with their bearing the name of the Aylesbury Dairy Company. But those observations of the learned Judge had no effect upon the case. He did not think that depreciating the use by the defendants of the name had any effect on the case. The circumstances of the case showed plainly the purpose for which the milk was sold. The circumstances spoke for themselves, and it would be a waste of time to ask a jury a specific question upon that particular point. With great respect and deference to the learned Judge, he thought that his direction to the jury was capable of improvement, but it did not affect the result of the trial. The application must therefore be dismissed.

Lord Justice Mathew delivered judgment to the same effect, in the course of which he said that there was no reason whatever for any reflection upon the defendant company. They had imposed stringent conditions upon the farmers from whom they obtained the milk, but it was obviously impossible, where their milk was drawn from different parts of the country, to see that each farmer complied in every respect with their conditions and requirements. He (the Lord Justice) regretted that the use of the word "Aylesbury" in the name of the defendant company was reflected upon by the learned Judge. He desired to say that he did not concur in those reflections, and in his opinion the defendant company came well out of the inquiry.

Lord Justice Cozens-Hardy agreed.

Preservatives in Milk.—At North London Police Court on March 4th, George Arnold, dairyman, was summoned by Mr. A. L. Bridge, Inspector under the Food and Drugs Act for the county of Middlesex, for selling milk to which boracic acid had been added. Mr. Ricketts defended. Mr. Bevan, the county analyst, had found that the milk contained 9¼ grains of boracic acid to the pint, which had, apparently, been added to preserve the milk. Mr. Ricketts stated that he relied on a warranty and contract. The milk was purchased under a yearly contract from Messrs. Price and Harris. Mr. Bridge contended that the warranty was not a good one. Mr. Cluer, the magistrate, said that the warranty was a clear promise to supply "pure new milk," and the contract said clearly "we will supply" and "I will take." That was all that was necessary. He dismissed the summons, but without costs. Mr. Bridge said he was instructed to take proceedings against the persons who had sent the milk to London.

Importation of Impoverished Milk.—At the Mansion House, on the 24th February, Oliver Bishop Laggett, a milk importer, was summoned before the Lord Mayor by the Commissioners of Customs for importing milk of impoverished condition and not conspicuously marked as impoverished, contrary to the Food and Drugs Act. Mr. A. F. Hubbard, for the Board of Customs, said that the milk came from Rotterdam consigned to the defendant. The case was described as containing "condensed milk unsweetened." It held 48 pound tins labelled "Sterilized milk." The milk purported to be Dutch sterilized pure natural cows' milk, rich in cream and free from bacteria. The manufacturers were the Amsterdam Sterilized Milk Company. An analysed sample showed a deficiency of fat of 8 per cent, and the packages should have been conspicuously marked as impoverished milk. Mr. F. W. Beck, solicitor, in defence, said that his client had been invited by the Amsterdam Company to be their agent, but before consenting he asked for a sample case; that case was the one seized; the defendant had not acted for the company in any way; no penalty would affect the company. The Lord Mayor said that the defendant was liable to a fine of £20, but in the circumstances he should reduce the penalty to 5s. with £5 5s. costs.

The Removal of House Refuse.—At the South-Western Police Court, on Feb. 28th, Mr. Francis gave judgment on a summons issued against the Wandsworth Borough Council by Mr. J. W. Baines, Barrister-at-law and Assistant Legal Adviser to the Local Government Board, for failing without reasonable cause to comply with a written notice, dated January 16th, requiring the refuse to be removed from his residence in Carlton Road, Putney. Cunningham Glenn supported the complaint, which took the form of a test case; Horace Avory, K.C., and Bernard Campion, represented the local authority. The question at issue was whether the Council could enforce the provisions of an order made in pursuance of a bye-law prepared by the London County Council and approved of by the Local Government Board, requiring occupiers within a prescribed area, under a penalty, to facilitate the removal of house refuse by placing it in receptacles on the public footway. It was contended that the bye-law was void as being unreasonable and *ultra vires*. The magistrate was not of opinion that the bye-law was bad, but he thought the defendant Council were endeavouring to carry it out in an illegal manner, and, as it was a test case, he fined the defendants the nominal penalty of 20s. and costs. In the course of his judgment he said: The case is that the Borough Council unlawfully failed to comply with a notice requiring the Council to remove house refuse under the provisions of the Public Health Act. Section 30 says, "It shall be the duty of every Sanitary Authority to secure the due removal, at proper periods, of house refuse from the premises," etc., and then, if they do not do so, the occupier may call upon them by written notice to do so, and if the Sanitary Authority "fail without reasonable cause to comply with this section they shall be liable to a fine." That is explained by other sections which show that the Sanitary Authority are not obliged to do it themselves. They may employ a sufficient number of scavengers, or contract with people. I think that is what those words "secure the due removal" mean. They must do it; if they do not do it themselves, they must do it by somebody else. Then there is section 16, and it is said there that the Council may make bye-laws under clause (*b*) "as to the duties of the occupier of any premises in connection with house refuse so as to facilitate the removal of it by the scavengers of the Sanitary Authority."

It is said by Mr. Avory that the Council did not fail without reasonable cause to comply with the section, because of that bye-law; they had the bye-law, and therefore they had reasonable cause for doing what they did.

In my opinion that bye-law, when it is looked at, is in itself inoperative, because the bye-law says that "where a Sanitary Authority arrange for the daily removal of house refuse in their district or in any part thereof," so that they can do it or not in any one street, "the occupier shall at such hour of the day as the Sanitary Authority fix and notify"; therefore, unless they fix and notify the time, the bye-law is not operative; and again, later on it says in the same bye-law, "by public announcement in their district, deposit on the kerbstone or on the outer edge of the footpath immediately in front of the house or in a conveniently accessible position on the premises, as the Sanitary Authority may prescribe by written notice served upon the occupier," again showing that that bye-law is not good without they prescribe by written notice what the occupier is to do.

I do not think it is necessary for my decision to say that it is a bad bye-law. I think that the bye-law may be perfectly good, but the Council's mode of carrying it out, in my opinion, is bad and wrong and illegal, because I think that the Borough Council are here refusing and failing to do what, in my opinion, the Act of Parliament says they are to do, namely, remove from the premises the house refuse. In other words, the Borough Council are saying to the occupier, "We will not do that, but you shall do it yourself. You remove it from your premises." That is what they say, and I think that that is wrong.

In my opinion, also, this notice goes beyond the bye-law to such an extent as to give the occupier permission to cause obstruction in the street. It is not necessary under that bye-law to cause as much obstruction as the Borough Council give permission to the occupier to cause. I think the Borough Council are wrong in the mode they have adopted for carrying out the bye-law, and there must be judgment for the complainant. I am willing to state a case for the opinion of the High Court.

THE HOUSING ACTS.—An order in Council states that the King has been pleased to order that all the powers and duties of the Secretary of State under the Housing Acts, or under any scheme made in pursuance of those Acts, and the powers of the Secretary of State under any local Act, so far as they relate to the housing of the working classes, shall be assigned to and become powers and duties of the Local Government Board.

CORRESPONDENCE.

DESTRUCTORS AND ELECTRICITY.

To the Editor of "Public Health."

Dear Sir,

Owing partly to the publication of a very instructive paper read by Mr. W. P. Adams, before the Institution of Electrical Engineers, public interest in the above question has been considerably stimulated. I think, therefore, that it may not be out of place to point out, with your kind permission, some misconceptions which may arise.

There is a tendency in some quarters to estimate the efficiency of any particular Destructor by the number of electrical units per ton of refuse which are produced in the works where such Destructor is in use.

The number of units which are produced per ton of refuse burnt depends chiefly on the following factors:—

1. The calorific value of the refuse.
2. The conditions as to day and night load, which determine whether all the refuse is used for steam raising, or whether the Destructor is working at full power, while the electricity plant is practically idle.
3. The efficiency of the electrical generating plant, which may require more or less steam per unit generated.
4. The efficiency of the Destructor plant with its boilers and flues.
5. Last, but not least, the efficiency of the management. It is therefore absurd to attribute to the Destructor either the whole credit for a good result in units per ton, or the whole blame for a poor result; and this is demonstrated by the fact that you will find one Destructor of a given make giving a very high figure, and another Destructor of the same make, but under different conditions, giving a low figure.

One of the most important factors in the efficiency of a Destructor, the cost of labour, is usually ignored when dealing with steam-raising results. In any Destructor, increased steam-raising results can usually be obtained by putting on increased labour, and "stoking in spoonfuls." From the steam-raising point of view, the all important question is what is the cost of a ton of steam produced by the Destructor in ordinary everyday work? Under the heading "Steam from Refuse and its Cost" the *Electrical Magazine* published on April 26th, 1904, some interesting figures showing the cost of labour per ton of steam, as well as the evaporation per pound of refuse, at a number of combined stations. It was shown that those stations where the highest evaporative results are obtained are not always the most economical, owing to the large expenditure in labour, and it is noteworthy that among those stations where utilization of steam is complete the best result came from Fulham.

If the Destructor produces a supply of steam at a reasonable cost for labour, it is for the electrical department to utilize that steam, and the credit for good results and the blame for bad results belongs by right to the engineers who are responsible for the construction and management of the whole combined works, and not to the maker of any particular part of the installation. I think that if the above facts were more generally recognized it would be in the interest alike of electrical engineers, Destructor builders, and the public, and would tend to discount a good deal of humbug.

I am, dear Sir, yours faithfully,

Leeds, *January* 31, 1905. F. Livatson, Assoc. M. Inst. C.E.

OVERCROWDING AT HEALTH RESORTS.

To the Editor of "Public Health."

SIR,

We read in all kind of journals, both daily and weekly, of overcrowding in houses and the effect it has on the health, and the deterioration of the human race; but very little is said about overcrowding at the seaside and so-called health resorts. There is this to be said: every one wishes to go to those places at the same time, therefore at the other parts of the year, those places are practically empty. Even in the months of May and June few are seen at the seaside and inland watering-places, and then about the end of July the abominable nuisance of overcrowding is observed. What benefit, might we ask, do the large number of people obtain from their so-called holiday? In the first place always overcharged, crowded bedrooms, dining room packed that you cannot with any degree of comfort lift your spoon and fork to your mouth. Might we ask the reason of this overcrowding, and what can be done to rectify the evil?

It appears nowadays the schoolmaster is chiefly to blame. He must take his holiday in August, and a good long one too; the children are therefore obliged to have theirs in that month, instead of in June as in former years; they must have this autumn holiday with shorter days and colder evenings. Parents are obliged to wait for the schools to break up for their holidays; hence the hotel and lodging-house keepers, who used in former years to have two summer seasons, as it were, must now have about a six weeks' season, all rush and no comfort for any one, instead of perhaps a four months' season of comfort as in former years. This state of things naturally makes lodging-house keepers very independent in August, and you have to take anything you can get—simply no choice in the matter. Many families have cause to regret their stay in certain places, due to overcrowding, foul air, and other causes, *viz.* sore throats, measles, scarlet fever, if not something worse. What guarantee has the mother when she engages rooms at the seaside or health resorts that they are free from infection? "None." What does she know about the sanitary condition of the house? "Nothing." I would compel all houses to be fully-licensed by the Medical Officer of Health, only a certified number to be housed at one time, and that they must all have bathrooms and proper conveniences. All cases of serious sickness and death to be reported to the Medical Officer of Health for the district, and if he thought proper to have a consultation with the medical man in charge, "he should have the power to do so." After a death the body should be removed within twelve hours to a mortuary, the room should not be re-occupied without being properly cleaned and the bedding disinfected. No room should be occupied for one week after a death or case of infectious disease.

Yours truly,
EDWARD CARNELL, L.R.C.P., M.R.C.S., D.P.H.

HOSPITAL ISOLATION.—A CORRECTION.

To the Editor of "Public Health."

SIR,

Allow me to correct a rather unfortunate error which appears in the otherwise valuable paper on Hospital Isolation by Dr. William Scatterty published in the March issue of *Public Health*.

Dr. Scatterty says (page 357): "Dr. Millard tells how in Leicester (1892) 141 scarlet fever patients were sent from hospital to make room for small-pox. . . . We are further told (*Public Health*, February, 1902) that during the following two months 400 odd cases occurred, *compared with* 90 during the previous ten months. Granted that there were many susceptible children owing to there being no epidemic for years, it seems evident that the 144 foci were like *torches set to fuel*, and that the benefits of hospital isolation, so far as reduction of prevalence is concerned, in contrast with home treatment, were demonstrated lamentably." (The italics are mine.)

If Dr. Scatterty will look up the reference he gives he will see that he should have stated "*compared with* 900 during the previous ten months" (exact figure is 923). This error, of course, completely vitiates the deduction Dr. Scatterty draws from the facts. Had the facts been as he stated his deduction would have been reasonable, but in reality the epidemic was well ablaze before the hospital was closed. This is brought out more clearly by considering the number of cases during the four preceding years. In 1888 there were only 132 cases; in 1889 there were 409 cases; in 1890 there were 516; in 1891 there were 794; and during the first ten months of 1892 (prior to closure of the hospital) there were 923. It is evident, therefore, that scarlet fever prevalence was steadily and rapidly going up, and this in spite of the fact that during this period 2,261 cases, or 81 per cent, had been removed to hospital. Yet, because in the two months following closure of the hospital (which happened to be November and December, the two worst months for scarlet fever) 408 cases occurred, Dr. Scatterty says that the 144 cases sent home were "like torches set to fuel," and that the "benefits of hospital isolation" were "demonstrated lamentably"!

Dr. Priestley, however, Medical Officer of Health for Leicester at the time, wrote in his annual report for the following year: "One naturally asks the question, 'Is a sanitary authority justified in spending enormous sums of money to keep an isolation hospital for scarlet fever patients full, and in this way to endeavour to stamp out the disease?' Our own statistics would seem to answer the question in the negative. The Committee have decided that in future only such cases of scarlet fever shall be admitted to the wards of the hospital as cannot possibly be isolated or nursed satisfactorily at home."

When Dr. Scatterty was quoting the experience of Leicester thirteen years ago it is a pity he did not also refer to our experience two years ago, in 1903, when the hospital was again closed and 98 cases of scarlet fever were sent home. On this occasion it was impossible to talk about torches or lamentable demonstrations, because so far from any increase of scarlet fever resulting a very marked decrease occurred.

It would have been well, too, in referring to Leicester, to have quoted the opinion of the late Sir Thorne Thorne: "I know that some people attribute it (the decline in scarlet fever mortality) to hospital influence; but wherever we have been able in a given large town to inquire how far any diminution has been due to isolation, we cannot make out that the diminution has in any sensible way been due to that practice. . . . Then, taking Leicester and Warrington, I presented a report to the Local Government Board upon the influence of isolation on infectious diseases, and I was keenly disappointed to find how little effect the isolation of scarlet fever cases in Leicester and Warrington had had on epidemic scarlet fever" (*First Rep. Roy. Com. Vacc.*, § 791).

Yours, etc.,
C. KILLICK MILLARD.

LEICESTER,
March 9*th*, 1905.

SCARLET FEVER IN SHEFFIELD.

To the Editor of "Public Health."

DEAR SIR,—

In *Public Health* for March, 1905, on pages 374, 375, and 376 are published certain remarks made by Dr. Willoughby, of Eastbourne, with reference to my paper on the recurrence of scarlet fever in Sheffield, which is published in the December issue of the *Journal* of the Sanitary Institute.

In answer to these criticisms I should like to offer certain explanations. In the first place I must thank Dr. Willoughby for having taken the trouble to read my paper entirely, with the result that he has drawn from the statistics precisely the same inferences which they presented to my own mind. He says (p. 375): "It pays the Sheffield householder, if a case of scarlet fever occurs in his house, to keep the case at home, as thereby, *ipso facto,* secondary cases are less likely to occur." That is quite true. But Dr. Willoughby goes on to say: "There is obviously a fallacy somewhere, . . . for it must be absurd to say that . . . there is less chance of a secondary case if the first is kept in the house." I cannot discover that he has any ground for such statements: they beg the whole question.

The state of affairs in Sheffield during four years (1900–3) was such as my tables disclose, and such as Dr. Willoughby depicts with commendable precision. The state of affairs in Eastbourne is represented as having been different from that in Sheffield. But this representation of the state of affairs in Eastbourne does not prove that my description of the state of affairs in Sheffield is either fallacious or absurd. That the result was unlooked for, I admit; and it was reluctantly that I recognized the facts. I was amazed at the result which I obtained, but any one with the faculty for comprehending figures cannot escape the conclusion to which they lead.

Dr. Willoughby naïvely suggests that the fallacy is due to the tabulation of insufficient data. And he supports his contention by discussing the following cases in Eastbourne which were not removed to hospital: 1900, 2; 1901, 5; 1902, 7; 1903, 3; total 17. The corresponding figures for Sheffield are: 1900, 1,017; 1901, 705; 1902, 885; 1903, 698; total 3,305. Dr. Willoughby states (p. 378): "The average number of cases of scarlet fever for the past ten years has been 69 . . ." The average number in Sheffield during the period dealt with was 1,745 per annum.

Dr. Willoughby frankly admits that his statistics afford room for fallacy. Such figures are, in fact, altogether too insignificant to base any conclusions upon. But a source of fallacy more dangerous than insignificant statistics is, to my mind, constituted by "special pleading" such as seeks by explaining away this case and that and the other, to reduce the statistics to such a form that they will appear to support a preconceived idea. There is no trace of such a practice in my tables. If there have been errors of diagnosis they have applied as much to one side as the other. Concealed cases have been attributed neither to the hospital nor to the home. I ought, nevertheless, to state that whenever a mistake in diagnosis has become known to the Medical Officer of Health, the error has been corrected and the notification cancelled. It is this corrected list (as published in the *Annual Report*) which has been absolutely and impartially analysed in my tables.

On the other hand, it is evident that Dr. Willoughby has, for strategical purposes, included such cases as the foregoing among his cases of scarlet fever, whereas in Sheffield they were eliminated. And so the slur which is implied in the third paragraph on p. 376 has obviously been cast in the wrong direction. It would afford me great satisfaction to tear all the arguments in Dr. Willoughby's paper to shreds. But I have chained myself down to remonstrance only in the case of those which call in question the validity of my statistics.

Granting, however, that Dr. Willoughby's inferences may be accurate, so far as Eastbourne is concerned, we have to look for some explanation of the different state of affairs existing in Eastbourne and Sheffield. The briefest possible exposition of my tables made my paper long enough, and so I did not enter at all upon the etiological aspects of the question. Some of these are ably dealt with by Dr. Anderson and others in the current issue of *Public Health*.

But as no one seems as yet to have offered any satisfactory explanation of this astonishing problem, I venture now to suggest one or two considerations which may be found on investigation to afford a clue toward its solution.

In small communities where scarlet fever breaks out only occasionally, and then usually by importation from a distance, it is obviously of the highest importance to isolate the earliest cases and enforce quarantine upon the "contacts," and so to "stamp out" each invasion. But while one can stamp out a spark or a small flame, it is not possible to stamp out a furnace. Other means must be sought to cope with it, or it may even have to be left to burn itself out.

Now, in great industrial centres with ten times the population of Eastbourne, and twenty times as many cases of scarlet fever annually, and in which the disease is always prevalent, the circumstances are utterly different. It is idle to talk of "stamping out" an epidemic. It is impossible to close all the avenues of infection. The wards of the hospital are in a state of chronic congestion; and it has been realized (in Sheffield, at any rate) that the occurrence of secondary cases has, *as a matter of fact*, been increased under the existing system.

The footnote to Table G in my paper is neither fallacious nor absurd. It shows that whereas the proportion of instances with recurrence up to twelve days was half as great again in the "hospital" group of houses as in the "home" group (*viz.* 15 per cent to 10 per cent), yet the proportion of recurrence later than twelve days was twice as great in the "hospital" group as in the "home" group (*viz.* 10 per cent to 5 per cent). These proportions are not drawn from a series of threes and fives, but of hundreds every year.

I am prepared to believe that the statistics of most towns similarly circumstanced would, if treated impartially on such a system as I adopted for Sheffield, compel a similar conclusion.

F. H. WADDY.

SHEFFIELD,
March 13*th*, 1905.

REVIEWS.

INFANTILE MORTALITY AND INFANTS' MILK DEPÔTS. By G. F. McCleary, M.D., D.P.H., M.O.H. Metropolitan Borough of Battersea. Pp. 135. Price 6s. net. London: P. S. King & Son, Orchard House, Westminster. 1905.

The appearance of this little book is extremely opportune. Infantile mortality is exciting a considerable amount of attention, not only among professional hygienists, but also among members of the laity. A Bill is before Parliament "to allow Metropolitan Borough Councils to establish and maintain Milk Depôts," and almost every annual report recently issued by Medical Officers of Health all over the country has something to say on the subject.

Dr. McCleary's book gives an account of the history and practical working of various depôts, of the objects for which they were established, and of the results which they have secured. This involved some consideration of the closely related subjects of infant feeding and infantile mortality, and in order to emphasize the importance of the latter a chapter has been added on the decline of the English birth-rate. There are some thirty good plates, illustrating institutions at Battersea, Liverpool, York, Brussels, Rochester (U.S.A.), Fécamp, Hodimont, and Madrid. The index is poor, and might with advantage be amplified in a future edition.

Dr. McCleary has dealt very fairly with his subject. Satisfied himself that milk depôts are doing much good, he has yet weighed the pros and cons, and points out that during recent years meteorological conditions have played a very important part in producing a reduction in infant deaths, and that therefore the credit for it cannot be claimed as a result of the working of milk depôts. In treating of "objections," Dr. McCleary has dealt with what might be called political objections, and has somewhat omitted medical objections; perhaps he thought he had sufficiently dealt with such questions as the production of infantile scurvy in former chapters. We are glad to see Dr. McCleary emphasizes two points—the importance of good ante-natal conditions, and that much harm may be done by over-feeding. The effect of the declining birth-rate on the future of the British Empire is clearly shown. Emigration to the colonies will cease, and they will be left to depend upon their own fertility; but in Australia, in Canada, and in Africa there is evidence that the British element is comparatively infertile. Has the nation yet realized what this means? We do not quite follow Dr. McCleary's explanation of the decrease of illegitimate births. He seems to lay more stress on the increase of unmarried females than his figures warrant; the ratio of such births is important as throwing a light on the measures which are being adopted. We do not take it that there is any improvement in morality.

THE MEDICAL ANNUAL. Pp. 695. Price 7s. 6d. net. Bristol: John Wright & Co. 1905.

On attaining its 23rd year the *Medical Annual* has had to adopt a larger page. At this we are not surprised, as medical science progresses at such a rapid rate in all its branches. One great advantage which the *Medical Annual* has is that the huge bulk of medical literature which pours forth every week is carefully winnowed by experts, and only the valuable grain is garnered within its covers. It is largely this fact which makes the *Medical Annual* welcome to the nearest bookshelf of the busy practitioner.

The *Annual* is so well known that it is unnecessary to go into any details. As last year, a series of stereograms are produced, for which a small stereoscope (price 2s. 6d.) is provided. The plates are reproduced from the ophthalmology section of Neisser's Atlas. There are besides many other illustrations. The publishers are to be congratulated on the style in which they produce the *Annual*.

PROCEEDINGS OF THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTITUTED, 1881. INCORPORATED, 1891.

Northern Branch.—An ordinary meeting was held in Newcastle-on-Tyne on Friday, the 24th February, 1905. Present: Dr. Hill (President), Drs. Hembrough, Trotter, Dingle, Stainthorpe, Hibbert, Mostyn, Andrew Smith, Messer, and Taylor.

After a full discussion the resolutions of the Midland Branch were agreed to.

The President then read his inaugural address on "Infant Mortality."

The President was heartily congratulated on his excellent paper, and the discussion was postponed till the next meeting.

After the meeting the Branch held its Annual Dinner in the Station Hotel.

North-Western Branch.—An ordinary meeting of the Branch was held at the Chemical Club, Victoria Hotel, Manchester, on Friday February 17th. Present: Dr. J. B. Wilkinson, President (in the chair), Drs. Barlow, Laird, Pringle, Buchan, J. W. Cook, Hitchon, Greenwood, Brindley, Peck, Berry, Chronnell, Sergeant, Garstang, Kenneth Fraser, and Stephenson.

DR. GARSTANG gave notice of intention to bring forward a motion relating to instructions given by a Rural District Council to its Medical Officer of Health to attend at the office of the Inspector of Nuisances on certain days and at certain hours.

DR. BERRY gave notice of a resolution which he intended to move urging that a representation be made to the Local Government Board relative to the appointment of Rural Medical Officers for a term of years.

DR. BRINDLEY (Bury) then read a paper on "The Declining Birth-rate," and a discussion ensued.

DR. BERRY thought that if the children born or surviving now were physically better than formerly, the decline in the birth-rate would not be of serious account. He suggested that the decline was in some measure due to the fact that early marriages were not so common as formerly. He heartily approved of the idea of remitting taxes to the parents of large families.

DR. PECK dissented from the statement that insanity was on the increase. He felt quite sure from the evidence he had the opportunity of going through, that the increase was only apparent and not real. He was of opinion that the decline in the birth-rate was to be attributed to the workings of prudence in the direction of postponing marriage to a later age.

DR. SERGEANT expressed the opinion that the declining birth-rate might not altogether be of an evil tendency, inasmuch as it might possibly be ascribed to the growth of a greater thriftiness. The whole question required very great consideration before any pronounced opinions could be given.

DR. GARSTANG emphasized the point that a declining birth-rate taken alone might not mean anything. He should like to see parallel with it for comparative purposes a column showing a corresponding fall in the death-rate and the infant mortality. If they had the three things together he thought they would have a better basis on which to found arguments and comparisons.

Dr. Brindley, in reply, said that the blame could not be laid altogether on the bachelors; the marriage-rate was increasing whilst the birth-rate was decreasing, a state of things which pointed only in one direction. He also pointed out the danger to the State resulting from the fact that the decline in the birth-rate was principally amongst the well-to-do classes: and concluded by stating that if the State desired, as a benefit to itself, that large families should be encouraged, the State must come to the aid of those who produced large families.

West of England and South Wales Branch.—A meeting was held at Newport on February 23rd, 1905. Present: Drs. Eben Davies (President, in the chair), E. Walford, W. H. Symons, Herbert Jones, J. W. Jenkins, Francis T. Bond, W. D. Steel, J. Howard Jones, D. J. Thomas, and R. Prichard.

Dr. D. J. Thomas read a paper on "The Action of the Merthyr District Council under the Housing of the Working Classes Acts," and showed copies of the plans.

Dr. Howard Jones followed with a paper upon "Slaughter-Houses and Meat Inspection."

Dr. Walford referred to the fact that at Cardiff they had no private slaughter-houses, and the work of meat inspection was thus much easier. The method of procedure in respect to bad meat at the slaughter-houses was to obtain the written consent of the owner to the destruction of the meat, without the assistance of a magistrate. In 1904 eighty-eight carcases were condemned, eighty-seven by consent of the owner and one by prosecution.

Dr. E. Davies stated that they adopted the voluntary method of surrender at Swansea. They had only two private slaughter-houses, and these were in the outlying districts.

Dr. Herbert Jones thought new public slaughter-houses should be arranged as a series of small slaughter-houses instead of building a large common slaughter-house.

The members afterwards visited the cold storage premises.

Scottish Branch.—A meeting of this Branch was held in Glasgow on 25th February, 1905. Present: Dr. Chalmers (President, in the chair), Drs. Brown, Dawson, Matthew Hay, Hislop, Ledingham, McVail, Mair, Munro, Robb, Sinclair (N.W. Branch), Templeman, and Wilson.

Dr. A. Robb (Paisley) was elected Secretary and Treasurer of the Branch in place of Dr. Knight, resigned.

Dr. Matthew Hay gave a most interesting account of the recent outbreak of typhus fever in Aberdeen. One hundred cases occurred; of the 17 persons above forty years of age, 12 died; of the 83 below that age, only 3 died. If typhus fever, like measles or whooping-cough, were confined—by the immunity of older persons through previous attacks—to young persons, it would be considerably less dangerous than almost any of the common zymotics. It is the very high mortality among older persons which invests it with its popular and traditional terrors. As to the distribution of the cases among households, it is of interest to note that 75 of the 100 cases were confined to 15 families, ranging from 3 cases in each of five families to 8 cases in one family and 9 in another. For three months the disease remained undiscovered in the city, no means whatever being taken to isolate the sick and to prevent the spread of the infection, and yet only 34 cases are known to have occurred during this period. In no case during this period has the disease, so far as is known, been communicated through contact with an intermediary.

CURRENT PUBLIC HEALTH LITERATURE.

Berliner Klinische Wochenschrift, Vol. LI.

(No. 17.) Has Success Been Obtained in the Campaign Against Tuberculosis?) Ascher, Königsberg. (In No. 44, 1903, Ascher published the first part of this paper. He again contends that though deaths from tubercle were fewer, those from respiratory diseases have increased; but, curiously, he asserts that the increase in the latter is mainly among children. Apparently Ascher has not taken a sufficiently wide survey of the question.)

Bladder Tumours in Aniline Workers. Relm at the 33rd German Congress on Surgery reported that he had observed 21 cases of tumour in the bladder among workmen employed in aniline works for five to twenty-nine years. In 3 instances it was a papilloma, but in the 18 others it was either a sarcoma or carcinoma. Eleven of the patients have already died. He urges others to seek for and publish such cases.

(No. 19.) Formaldehyde Disinfection.—H. Bonhoff, Marburg. (He considers that Flügge's formula of 2·5 gm. formaldehyde to the cubic centimetre is too small a dose to be effectual. For ordinary cases 5 gm. and seven hours of exposure are necessary. When the conditions are unfavourable the proportion of formaldehyde should be twice this.)

(No. 20.) Transmission of Tuberculosis. A. Heller refers to the experiences at Kiel, including Wagener's finding of 76 cadavers with primary tuberculosis of the intestines and mesenteric glands in the course of 600 necropsies. Also Hof's finding of primary tuberculosis of the digestive tract without involvement of the lungs in 16·6 per cent of 15,000 necropsies, and 8·5 per cent additional in which these lesions in the digestive tract coincided with lesions in the lungs, the total thus being 25·1 per cent of the entire material. In the country around Kiel the milk is very seldom boiled or pasteurized, while in Berlin the opposite rule prevails. He thinks that this explains the larger proportion of tuberculous infections of the digestive tract in the former.)

Prevention of Infectious Diseases in Schools. Address delivered at the School Hygiene Congress by F. Hueppe. (In regard to disinfecting school rooms, he thinks the delay of the inevitable "red tape" renders its results illusory, and he advocates instead thorough daily cleaning of the room and ample ventilation as the best mode of combating infection. He adds: "Must we wait for some disastrous epidemic to teach us the lesson to clean the room every day?" Oiling the floor facilitates wet cleaning. He thinks the brush and hose attachment invented by Professor von Fritsch of Vienna a valuable means of thorough cleaning with constant washing through the brush. Where wet cleaning is not practicable the vacuum cleaning apparatus should be used. Some such cleaning measures should be applied daily.)

(No. 27.) Mode of Action and Limitations of Curative Sera. Sobernheim.

(No. 39.) The Constitution of Diphtheria Toxin. R. P. van Calcar.

(No. 41.) Action of Lead on the Uterus. L. Lewin. (Professional lead poisoning is more common among women than men. In Vienna 26·4 per cent of the women, and only 6·9 per cent of the male employés in the type foundries, and 80 per cent. of the women making lead foil capsules, are victims of lead poisoning. He has been examining 81 such women, and found that out of 123 pregnancies there are only 14 living children. Lead poisoning in the father alone leads to equally direful consequences. In 7 such married couples, with 32 pregnancies, there was abortion in 11 cases, and only 5 of the children survived to the third year, and 3 of these died soon after. Lewin comments with approval on the regulations in France, which exclude women from trades using phosphorus, arsenic, chromates, etc.)

(No. 42.) Spreading of Female Genital Tuberculosis. P. Baumgarten.

Disease and Industrial Poisoning. L. Lewin.

(No. 43.) Immunization against Tuberculosis. P. Baumgarten. (Although it may not not be possible to produce an effectual curative serum against tuberculosis, yet we have strong grounds for hoping that man can be protected against the disease in the same way as cattle against bovine tuberculosis, by vaccinating human subjects with bovine tubercle bacilli. But before this can be realized in practice, the objections against the non-identity of human and bovine bacilli and their reciprocal harmlessness must be all encountered and refuted.)

Successful Treatment of Phthisis and other Severe Infectious Diseases with Loretin. Konrad Küster. Loretin is a meta-iodo-ortho-oxy-chinolin-ana-sulphonic acid combination.

(No. 44.) Intestinal Tuberculosis in Children in the Mining District of Waldenburg. R. Richter.

(Nos. 45 and 46.) Meat Inspection. M. Westenhoeffer,

(No. 48.) Carbonic Oxide Poisoning. J. Strassmann and G. Schulz.

Routes of Infection in Tuberculosis. M. Wassermann. (He believes that pulmonary tuberculosis frequently starts at some point in the mouth or throat.)

Münchener Medicinische Wochenschrift, Vol. LI.

(No. 9.) Bacteriology of the Conjunctivitis of Measles. O. Rudel.

(No. 11.) Studies on the Phenomena of Precipitation. M. Neisser and U. Friedemann.

Non-Agglutination of the Typhoid Bacillus by the Blood Serum of Persons suffering from Icterus. Steinberg.

Typhoid Bacilli in Excreta of Convalescents. Herbert. (An epidemic of 98 cases occured in a public institution; 59 of the subjects sickened within three days, and infection was clearly traced to 2 previous cases. One of these two patients infected a woman employed to wash the salads and potatoes for the table, and it is concluded that through her the others became infected.

Origin of Tuberculosis. G. Cornet, Berlin. (He cites the Prussian official statistics to show the constant progression of the number of cases from the third year upward to the maximum between 60 and 70. He adds that he has personally experimented on between 3,000 and 4,000 animals to determine the mode of infection with tubercle bacilli and allied points. In every instance the portal of entry itself shows signs of the infection, or in any event, the nearest adjacent glands. The exact mode of entrance of the infection can be determined for every individual case from the pathological lesions, except when the general organism is completely involved. The statistics further show that tuberculosis is constantly decreasing in Prussia. The number of lives thus saved amounts to 870,000 since 1889, estimating the deaths that would have occurred if the previous average death rate from tuberculosis had been maintained.)

(No. 12.) Destruction of Tubercle Bacilli in Milk. W. Rullmann, Munich. (He found the bacilli alive and virulent in milk heated to various temperatures for various periods of time, but never when the milk was heated to 68 C. (156 F.) for one hour, during which it was kept in constant motion. The taste of the milk and the chemical condition of the constituents of the milk are scarcely at all affected by the temperature, while the extremely virulent bacilli were all destroyed. He, therefore, commends this method of sterilization as perfectly effective, while free from the objections of other technics.

(No. 16.) Lysol Poisoning. F. Fries. (A young woman drank 25 to 30 gm. of pure lysol with suicidal intent. The drug caused a violent hemorrhagic nephritis with severe uremia. Recovery by the end of third week.)

Gloves for Nurses and Physicians Handling Typhoid and Other Infectious cases. Georgii, Maulbronn. (He expresses astonishment that the use of gloves has not been insisted upon. The reason has probably been the lack of appropriate gloves for the purpose, those used by physicians being too expensive and fragile. He has sought to remedy this by having gloves made of a soft thin waterproof cloth ("paragummistoff"), which are supplied by the Sanitätsgeschäft, Emilie Bürk, Stuttgart, Postr. 6, for 4 marks a pair for the long gloves reaching to the elbow. They are made large so as to slip on and off easily, and are fastened by an elastic band near the elbow and wrist. He has found these gloves indispensable for nurses, to be used when making the bed, lifting the patient, cleaning after soiling, etc. A cheaper, shorter glove is used for other services. For physicians he advocates these gloves or the kind used by chemists. The latter cost a little more, but will be found very convenient and safe. He now uses them in post-mortem work, in changing dressings, incising a phlegmon, etc.; in short, whenever it is possible to dispense with the finer sense of touch. They deprive the examination of typhoid urine and fæces, and contact with the patient, of danger. These chemists' gloves are much more durable than surgeons' gloves, and will stand boiling and disinfection, and do not require any special care to keep them in good order. He thinks that they have solved the problem of the glove for the general practitioner, and that the waterproof stuff glove mentioned above should be provided for the nurses in every typhoid case at least. His nurses never liked ordinary rubber gloves, but they are enthusiastic over the new, light waterproof cloth gloves, saying that they scarcely interfere at all with the sense of touch or the use of the fingers. Even if they do not prove absolutely germ-free, they at least protect the hands and arms against the most dangerous contamination.)

The Campaign against Ankylostomiasis in Westphalia. (H. Bruns reports from the Institute for Hygiene at Gelsenkirchen that the number of miners found infested with these parasites has dropped from 13,621 to 3,668 in the last nine months in the 86 mines. employing 70,000 men, tributary to the Institute. The campaign of prophylaxis was based on the microscopic findings, which enable the foci to be discovered and limited. All attempts to disinfect the mines were practically abandoned. The public was instructed in the nature of the affection by pamphlets, lectures, pictures and photographs; and extensive and convenient model sanitary baths and closets were supplied above ground, with receptacles for stools in profusion through the mines. The best results were obtained when the infested men were taken into barracks devoted exclusively to this class of cases. A single course of treatment with male fern was successful in expelling the parasites in all but 15 to 30 per cent of the cases. In conclusion he states that the results obtained far surpass those reported from any other country, and that the hygienic and sanitary measures adopted cannot fail to have a marked benefit on the general health of the miners, besides freeing the mines from ankylostomiasis. The latter is probably only a question of time.)

(No 17) Action of Fluorescent Substances on Diphtheria and Tetanus Toxins. H. v. Tappeiner and A. Jodlbauer, Munich.

(No. 18.) Tuberculin Reactions. H. Smidt. (Post-mortem conditions found in a number of cases in which tuberculin had been used.)

(No. 20.) Relationship of B. Fæcalis Alkaligenes to Typhoid Bacilli. E. Altschuler.

(No. 24.) Diagnosis of Typhoid Fever. Rolly. (50 cases were examined, and the bacilli were found in the blood in 88 per cent; in 16 cases a positive result was obtained before there was any response to the agglutination test.)

(No. 25.) Chemical Processes Involved in Action of Light on Fluorescent Substances (Eosin and Chinin), and the Import of these Processes for the Action of Toxins. W. Straub, Leipsic.

Action of Photodynamic Substances on Bacteria. A. Jodlbauer and H. v. Tappeiner.

Neutrophile Leucocytes in Infectious Diseases. J. Arneth.

(Nos. 25 and 26.) The Soil, not the Water, the Transmitter of Cholera and Typhoid. R. Emmerich and W. Gemünd, Munich. (They find that nitrates enhance the virulence of cholera germs; when there are no nitrates in the stomach the action of the bacilli is mild.)

(No. 28.) Primary Intestinal Tuberculosis in the Calf. A. Trentlein, Wurzburg.

Angina Ulcerosa-membranacea. A. Uffenheimer.

(No. 29.) Variability of Bacteria and of Agglutination Phenomenon. F. Passini.

(No. 30.) The Hygiene of Smoking. J. Bamberger.

(No. 32.) Heart Disturbances in Scarlet Fever. Schmaltz.

(No. 34.) Portals of Entry for Tubercle. B. Fischer, Bonn. (Among the arguments presented by Fischer to prove the fallacy of von Behring's recent announcements is the fact that pulmonary tuberculosis is as common in Japan as in Europe, and yet, for religious reasons, the children are never given cow's milk, but are always nursed by their mothers or wet nurses. In one point, however, von Behring's views deserve the widest attention and acceptance. This is that the war against tuberculosis must begin with the infant. The child must be removed from a tuberculous environment, its food must be germ-free, and its body must be rendered so robust that it will come out victorious in the almost unavoidable conflict with tuberculous infection later.)

Tuberculosis on the Basis of the Latest Researches. Wolff. (His experience at the sanatorium at Reiboldsgrün, and his deductions from what has been written and learned in regard to tuberculosis, have convinced him that it is essentially a chronic, constitutional, infectious disease, with hæmatogenic dissemination of the infection to all organs. A single infection—which usually occurs in childhood—suffices for the later development of phthisis, but a second infection of an already infected subject remains a superficial affection, without further consequences.)

(No. 37.) Typhoid and Paratyphoid Bacilli in Affections of the Biliary Passages. F. Blumenthal.

Tuberculosis Inoculated by a Morphine Syringe. O. Bruns.

(No. 38.) Tuberculosis of the Placenta. Geipel.

Results of Sanatorium Treatment. E. Rumpf.

The Milk Supply of Cities. Trumpp. (He suggests that the Red Cross should assume charge of the milk supplies in cities, backed by the authority of the state, and aided pecuniarily by the municipality. The dairies should not be more than an hour's ride from the city, and should deliver the milk in cans to central stations, where it should be put up in bottles containing a day's ration for an infant. The bottles should be distributed to numerous branches, conveniently located, perhaps in drug stores, and sold at cost price or given free to the poor. He states that 200,000 infants die every year in the German empire, and that three-fourths of this mortality is due to the feeding. The Red Cross is well organized throughout the country, the "Vaterländische Frauenverein" alone numbering 250,000 women members.)

(No. 40.) Nail Changes after Scarlet Fever and Measles. E. Feer.

(No. 44.) Cinnamic Acid in the Treatment of Tuberculosis. F. Schragge. (Its use recommended.)

(No. 45.) Blood Corpuscles in Infectious Diseases. J. Arneth.

(No. 46.) Comparative Pathology of Animal or Plant Tissues. E. Kuster.

Post-diphtheritic Nephritis. A Mayer. (The urine should be examined from time to time, long into convalescence.)

Birth Statistics in Bavaria. Grassl.

(No. 48.) Iodine Sulphuric Acid Test for Starch. E. Neumann.

Simplification of the Gruber-Widal Reaction. C. Stäubli.

Serum Diagnosis in Typhoid Fever. J. v. Tiling.

Suggestion and Temperature in Tuberculous Patients. F. Köhler and M. Behr. (They advise a sham injection before the true tuberculin test. A positive response to a tuberculin injection should not be estimated from the increased temperature alone, but from the general condition and changes found in the lungs.

Centralblatt f. Bakteriologie, Etc., Jena, Vol. XXXV.

(No. 4.) Streptococcus Toxins. F. B. Simon, Zurich.

Ein neuer tierpatogener Mikrobe Bacillus carnis. E. Klein, London.

Bacterium cyprinicida nov. spec., der Erreger der Rotseuche der karpfenartigen Fische. M. Plehn, Munich.

Das Agglutinoskop. Ein Apparat sur Erleichterung der makroskopischen Beobachtung der Agglutination im Reagenz Glaz. H. Jäger, Strasburg.

Study of Light Intensity in Phosphorescent Bacteria. A. Lode, Innsbruck.

To Clarify Agar Without Filtration. H. Fischer.

Robert Koch. L. Löffler.

Ueber die Intracellulären Toxine gewisser Mikroorganismen. A. Macfadyen and S. Rowland.

Zur Biologie des Influenza Bacillus. A. Luerssen.

A Note on Occurrence of a Trypanosome of the Rabbit. G. F. Petrie, London.

Complement-Ablenkung durch hämolytische Ambozeptoren. J. Morgenroth.

Alcohol Decoloration of Gram-stained Bacteria for Diagnosis of Species. E. Neide.

Contribution à l'étude. à la classification et à la nomenclature des affections connues sous le nom d'actinomycose. J. Lignières and G. Spitz, Buenos Ayres.

(No. 5.) Bacterium Found in Man Resembling that of Glanders. H. Selter.

Zur Biologie des Influenza Bacillus. A. Ghon and W. v. Preyss, Vienna.

Ueber die feine Struktur des Milzbrand-Bacillus. D. Ottolenghi, Siena.

Typhus Bacillen im Brunnerwasser (Spring Water.) D. Konradi, Kolozsvar.

Bacterienbefunde bei der Euterentz- ündung der Kuh und der Ziege. P. Steiger.

Trypanosoma-Infektion beim Menschen. F. Marchand and J. C. G. Ledingham, Aberdeen.

Invasion Through Skin in Ankylostomiasis. Reply to Pieri. A. Looss, Cairo.

Protective Inoculation Against Cholera. N. Murata, Kobe.

Hämolytische Wirkung des Löfflerschen Bacillus. J. Schwoner.

Das Hämolysin des Bacillus der Hühnercholera. D. Calamida, Turin.

Study of Immune Bodies. R. Sleeswijk.

Gibt es latente Präziptine? F. Nagelschmidt.

Bactericidal Power of Bismuth. E. Koch.

Ueber die Disinfektion mit Karboformal-Glühblocks. A. Liedke.

(No. 6.) Studien über Morphologie und Biologie des Milzbrand Bacillus. H. Preisz, Budapest. (Concluded.)

Zur Aetiologie des Gasbrandes. A. Ghon and M. Sachs. Part ii. (Continued.)

Zur Aetiologie der Gas-Phlegmone. L. Kamen. (Concluded.)

Untersuchungen über die Anaerobiosis. C. Fermi and E. Bassu, Sassari.

Bakteriologische Untersuchungen bein Erysipel. P. Krause, Breslau.

Erreger der toxämischen Hämoglobinurie bei dem Vieh in Kuban. E. Djatschenko, St. Petersburg.

Nachforschungen und experimentelle Beobachtungen über die Wutkrankheit. E. Bertarelli and G. Volpino, Turin.

Zur experimentellen Lyssa der Vögel. J. v. Löte, Kolozsvar.

Die Tetrabothrien der Säugetiere. O. Fuhrmann, Neuchâtel.

Structure of Adult Ankylostomum. A. Looss.—Zum Bau des erwachsenen Ancylostomum duodenale.

Importance of Puncture of Spleen and Veins for diagnosis of Typhoid. N. Jansco, Kolozsvar.

Centrifugalization and Disintegration in Relation to the Virus of Rabies. J. O. Wakelin Barratt. (Concluded.)

Results of Application of Koch's Method of Combating Typhoid. v. Drigalski.

Ueber die bakteriologische Diagnose des Typhus abdominalis mit Hilfe des v. Drigalski-Conradischen Nährbodens und der Agglutination. B. Lipschütz, Vienna.

A Study of the Disinfectant Action of Hypochlorous Acid, with Remarks on its Practical Action. F. W. Andrewes and K. J. P. Orton, London.

(Concluded.) (The germicidal power of pure hypochlorous acid, *in absence of organic matter*, is of the most intense kind. Fully exposed anthrax spores are killed by a 0·01 per cent solution in one minute. In a strength of 0·001 per cent it kills the *Staphylococcus aureus* in one minute, and the colon bacillus in a strength of 0·0004 per cent. In presence of organic matter it is comparatively inert. A combination of hydrochloric acid with ammonium persulphate for an oxidizing agent, has proved fully the equal of Krönig and Paul's potassium permanganate-hydrochloric acid germicide, while it is more stable, and free from the disagreeable staining properties of the latter. In presence of a moderate amount of organic matter it is actually superior to the permanganate mixture. The writers commend the new combination as especially valuable for skin disinfection and sterilization of sponges. The formula is a 8·7 per cent solution of ammonium sulphate mixed with 1 per cent of strong aqueous HCl and kept for a few days. The formula for the permanganate mixture is potassium permanganate, 1 gm.; HCl aq. fort. 1·1 cc. in 98 cc. distilled water. The parallel formula of the new mixture is ammonium persulphate 8·7 gm.; HCl aq. fort. 1·1 cc. and 95 cc. distilled water. The disinfectant properties of various preparations of chlorine are probably due to their hypochlorous acid content. The above mixtures are much more powerful than corresponding strengths of sublimate.)

Zeitschrift für Hygiene und Infectionskrankheiten,
Vol. 47, Part III.

Enquiries into a Pathological Process in Calves' Livers, accompanied with the Formation of Tubercles, and its Cause. A contribution to the pathology of cattle. By Rudolph Langer, (The Hygienic Institute of the Imperial High School of Veterinary Surgeons, Berlin). (This is an experimental enquiry into a pathological process which had been frequently noticed in the livers of calves, but the cause of which was hitherto unknown. It consists in the formation of numerous tubercles, which are most visible on the cut surface of the liver. They vary in size from almost invisible granules, up to grains as large as groats, and project above the cut surface. They have sharply defined edges, and are greyish-white to orange in colour. The cause was found to be a bacillus, which was easily isolated by inoculation of pieces of the tubercle into mice and guinea-pigs. The author describes the bacillus as a new species of paratyphus, and has given it the name of *Bacillus nodulifaciens bovis*. It is especially pathogenic to calves, white and grey mice, less so to guinea-pigs and rabbits. Dogs are immune. The presence of toxins could not be demonstrated in the cultures or organs. There is no evidence that it is pathogenic to man, or that the flesh of calves affected by it is injurious.)

On Actinomyces Thermophilus and other Actinomycetes. By Dr. Gilbert, Bonn. (This is a resumé of our knowledge of actinomyces in general, and was started by the chance discovery of a new form of *Actinomyces thermophilus* in Bonn in the summer of 1903. The author makes a searching enquiry into eight different species as regards their morphological, biological, and pathogenic character. He comes to the conclusion that the view advocated by Kruse, viz., that they form a connecting link between the trichomycetes and the schizomycetes is probably the correct one. At each end of the series they present characters akin to these, the non-virulent more closely resembling the trichomycetes, and the virulent approaching the schizomycetes.)

On Hæmolysin in Animals after Splenectomy. By Jakuschewitsch, Charkow. (In animals deprived of their spleen has been found (1) Decrease in number of red blood corpuscles; (2) Increase in leucocytes, especially lymphocytes; (3) Decrease of hæmoglobin; (4) Delay in blood regeneration after bleeding; (5) Increase of blood-forming power of the bone marrow. The extent to which the formation of hæmolysins depends on the spleen has been the subject of differences, London holding that it played the principal rôle and that the "making of Hæmolysin is bound up with the function of the spleen"; Tarassewitch holding on the contrary that the part of the spleen is subordinate, and that the formation of hæmolysins is the work of the whole system of the macrophages. The object of the author was to prosecute an experimental enquiry into the subject, and demonstrate whether the animals deprived of the spleen were not in practically a similar condition as regards their power of forming hæmolysins as animals in their normal condition. For this purpose he treated goats with sheep's blood, guinea-pigs with rabbit's blood, rabbits with guinea-pig's blood, along with similar control animals, and as a result came to the conclusion that (i) according to the amount of immunization the hæmolytic value of the blood serum increased in both those deprived and those not deprived of their spleen; (ii) that in all stages of the enquiry the hæmolytic value of the serum not only was not less in animals deprived of their spleen, but was even somewhat greater than in the control animal; (iii) that the length of time after splenectomy when the immunizing is begun has no essential influence on the hæmolytic strength of the serum. This increase of hæmolysin formation in "splenectomized" animals has been attributed to an increase of the leucocytosis and of the blood-forming power of the bone marrow. Animals thus operated on bear artificial infection just as well as those not operated on.)

On Polyvalent (Multipartial) Sera, with Special Reference to the Immunity produced by the Bacillus of Swine Fever. By Professors A. Wasserman and R. Ostertag, Berlin. (In the above paper, which is an account of the result of experiments in the production of an antitoxic serum for swine fever, the authors take the opportunity of discussing the subject of polyvalent sera in general, and the mechanism of their production in the light of Ehrlich's side-chain theory. The synonym "multipartial" applied to these sera signifies that they use the word in a different sense from that in which it was previously employed by Denys and Van de Velde in the production of their anti-streptococcic serum. The latter applied the name to a serum produced from a number of streptococci, such as those of erysipelas, pyæmia, septicæmia, etc., which cause different clinical symptoms, and therefore are more like distinct species. The authors, however, use it in reference to a serum produced from a single species of bacillus, the races of which, while producing similar clinical symptoms, nevertheless vary considerably in their toxicity and immunizing power. In swine fever it has been found that each race will immunize best against the particular set of symptom it produces, and by using a variety of races you can get a serum which acts against all the varieties of this fever. They hope that by these experiments they have cleared the ground somewhat for similar ones in other diseases.)

Experimental Contributions on Immunity against Swine Fever. By Dr. C. Bruch, (Institute for Infectious Diseases, Berlin). (This is an account of a series of experiments on the above subject. It might be considered as supplementary to the last. His conclusions are :—

1. The virulence of the bacillus of swine fever is subject to great variation in artificial cultures.

2. On autolysis it produces no poison which is soluble in water.

3. It produces no hæmolysin or leucocidin worth mentioning.

4. In swine fever the principle of polyvalence must be duly regarded in protective inoculation.

5. The distinction between monovalent and polyvalent swine fever serum is, that as a result of the number of partial *amboceptors* the latter contains while working in greater concentration, it exhibits a wider range of protection.

In advocating the employment of polyvalent serum in this disease he further states that "where a monovalent serum in practice comes across a race of bacillus for which it possesses no partial-or bye-amboceptors (nebenamboceptors), it must fail to act, while a polyvalent serum, for the reasons stated above, possesses more favourable chances for activity from the first.)

On the Question of the Similarity or Difference in Races of Swine Fever Bacillus. By Dr. Krantstounk, Berlin.

Experiments with Septicidin (Landsberg) in Swine Fever. By Dr. Breèdert, Prenglau.

Streptotrichosis Œsophagi in a Thirteen-year-old Boy. By Dr. Joseph Langer, (Prague-Kinderklinik).

The Size of School Children and School Desks. Enquiries among 7277 schoolchildren. By Dr. H. Berger, (District Physician in Hanover). (The author made enquiries in 87 districts in Hanover and Neustadt, regarding the height, weight, etc., of 7277 school children in the State schools. He emphasizes the importance of ascertaining the proportions of the different parts of the body to one another as well as the general size. The former, however, lend themselves readily to normal average figures. He thinks from his figures, which were obtained among comparatively pure tribes in these districts, that the subject of the proper size of desks can be resolved by having regard to the particular tribe or race you are dealing with (volks stammweise.) He comes to the conclusion that four different sizes of bench are necessary, and that the conditions of growth of school children demand careful handling in the matter of desks.)

On a Form of Tropical Fever of Uncertain Origin and not Malarial. By Moritz Silberstein (Ships' Doctor in Amsterdam). (This is an account of three outbreaks which occurred among the ship's crew, and all of which had different clinical symptoms. The first two occurred while the ship was in the harbour of Tandjong Priok, Batavia. The last occurred on the way home from Java in the Indian Ocean, Red and Mediterranean seas. The first outbreak consisted of an attack which lasted five days in each patient. Five of the crew were subjects of it. There was an invasion period of twelve to eighteen hours followed by a remittent period of two days. On the fourth day there was a sudden rise of temperature which ended on the fifth by crisis. All the patients recovered. No malaria parasites were found. This form was first described by Dr. Van der Schee in 1894. In the second outbreak, six patients suffered. The fever only lasted twenty-four hours, and resembled an abortive form of influenza. There was no exanthem or positive result on blood examination. The third outbreak, the author designates as a short exanthem. It occurred in five persons on board. This broke out among the passengers, two to three weeks after leaving Java, where the infection was probably acquired. It resembled rötheln. But this disease does not occur in Java. He points out other differences between it and measles. This also gave a negative result on a search after the malaria parasite. The author thinks that these fevers belong to forms of tropical fevers which are at present little known and have escaped observation, through the universal attention which the various forms of malaria have attracted.)

Giornale della Reale Societa Italiana d'Igiene, Vol. XXVI.

(No. 1, Jan.) The Consumption of Alcohol in the Province of Como. Dr. Cesare Rossi.

Note on a Special Reaction in Milk. Dr. Guiseppe Belei.

Immunization and the Secondary Products of Tuberculosis. Dr. F. Pedrazzini.

To Distinguish by Means of Gram's Method, Pathogenic Germs which are sometimes Resistant, sometimes not. Dr. Italo Bonini Bonino, Institute of Hygiene, University of Rome.

(No. 3, March.) A New Falsification of Black Peppercorns by the Addition of Imitation Peppercorns. Dr. Pietro Barbagallo. (The artificial corns are in three layers, the outer being very black, the inner ones white; they weigh heavier than the real corns, and have a hot taste; when placed in water they sink and disintegrate into a grey powder. They apparently consist of bran, flour, powdered olives, and refuse of Spanish (large) pepper, cemented together by means of dextrin, and covered in charcoal.

(No. 4.) Note on the Powers of Resistance of Pathogenic Anaerobic Organisms of the Soil. Dr. Guiseppe Cao, University of Cagliari.

Flies and the Diffusion of Germs. Amedeo Berlese.

An Aspirating Bottle for the Aseptic Collection of Blood Serum. Dr. G. Cao.

(No. 5.) Systematic Research into the Anaerobic Flora of Milk. Dr. A. Rodella, University of Rome.

(No. 6.) Italian Death Statistics from 1887 to 1901, Distributed in Age-periods. Dr. Gino de Rossi, University of Pisa.

Contribution to the Study of the Number Values of Sick and Convalescent Men. Dr. Rafaele Pes.

(No. 7.) The Influence of Movement on the Vitality and Virulence of Organisms. Dr. G. Cao. (Continued in Nos. 8 and 9.)

Inquiry as to Respired Air in Confined Places. Dr. G. F. Gardenghi. (Continued in Nos. 8 and 9.)

(No. 8.) The Municipal Disinfection Service in Milan. (Continued in Nos. 9 to 12.) Pietro Ferrari.

(No. 10.) Lysoform. E. Galli and A. Ceradini.

(Nos. 10, 11 and 12.) The Scope and Importance of Scholastic Hygiene. Silvio Belotti.

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* Friday, April 14th. "The Administration of the Midwives Act," by Dr. G. H. Fosbroke.

* The Council meets on this date.

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April 14th. "The Midwives Act," by Dr. E. Sergeant.

May 19th. "The Influence of Privy-Middens and Water-Closets on the Annual Epidemics of Zymotic Diarrhœa and Typhoid Fever," by Dr. A. W. Martin.

June 16th. "Discussion on the Housing of the Working Classes in Rural Districts." Opened by Dr. T. W. H. Garstang.

SOUTHERN BRANCH.

April 7th. At Southampton.

NORTHERN BRANCH.

April 28th. At Darlington.

June 23rd. At Hexham.

October 27th. At Newcastle-on-Tyne.

Continued on p. xii.

Epsom College.—Mrs. Skinner, widow of the late Medical Officer of Health for Willesden, is a candidate for a pension. Subscribers to this Fund are invited to give their votes in her favour.

The International Housing Congress.—The seventh International Housing Congress will be held at Liége, Belgium, from August 7th to 10th, in connection with the Universal and International Exhibition, which will be opened in that town on April 22nd. A series of prizes has been offered for a special competition in regard to the construction of workmen's dwellings, not in imitation materials, but in actual building materials. Twenty-five houses of different types are to be erected by building societies and industrial dwelling societies, and these houses will be adopted as actual dwelling houses after the exhibition has closed. The international committee for the organization of the congress is represented in this country by Mr. Henry R. Aldridge (secretary, National Housing Reform Council); and information regarding the detailed arrangements for the Congress will be gladly sent by post to any correspondent interested in the housing question, on application to him at 432, West Strand, W.C.

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CONTENTS.

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EDITORIALS—

	PAGE
MAGISTRATES AND THE PUBLIC HEALTH ACTS	487
THE POSITION OF MEDICAL OFFICERS OF HEALTH	489

SPECIAL ARTICLES—

	PAGE
THE CAUSES OF THE INCREASE OF AGRICULTURAL ANTHRAX IN GREAT BRITAIN	491
THE ACTION OF THE MERTHYR DISTRICT COUNCIL UNDER THE "HOUSING OF THE WORKING CLASSES ACTS"	526

ANNOTATIONS—

	PAGE
STANDARDIZATION OF DISINFECTANTS	490
ANTHRAX IN 1905	525
THE DISPOSAL OF ANTHRAX-INFECTED CARCASES	525

ANNOTATIONS (*continued*)—

	PAGE
A NOVEL SYSTEM OF VENTILATION	525
THE RETURN TO THE COUNTRY	533
SHABBY TREATMENT OF A MEDICAL OFFICER OF HEALTH	533
ANTHRAX IN LANARKSHIRE	534
SANATORIA FOR LONDON CONSUMPTIVES	534
TYPHUS FEVER AND VERMIN	535
SOMERSET COUNTY COUNCIL APPOINT MEDICAL OFFICER OF HEALTH	535
PARLIAMENTARY NOTES	538
THE SANITARY CONDITION OF ST. ASAPH	538
DRAUGHT PREVENTION IN CHURCHES AND LOFTY HALLS	540

Continued on Page vii.)

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CONTENTS—*continued.*

LAW REPORTS—

WOLFENDEN *v.* McCULLOCH - 536
ALLEGATIONS AS TO A RUBBLE DRAIN - - - - - - 537
FERROUS SULPHATE IN BEER 538
INDUSTRIAL ANTHRAX REGARDED AS AN ACCIDENT 538

REVIEWS—

MENTAL DEFECTIVES: THEIR HISTORY, TREATMENT, AND TRAINING - - - - - 539
AIDS TO THE STUDY OF SANITARY LAW - - - - - 539
PREMATURE BURIAL, AND HOW IT MAY BE PREVENTED - 539
BIRTHS, DEATHS, AND MARRIAGES - - - - - 540

CORRESPONDENCE—

SCARLET FEVER AT SHEFFIELD 541
HOSPITAL ISOLATION—A CORRECTION - - - - - 541
VACCINATION EXPENSES COMMITTEE - - - - - 542
DUTIES UNDER EDUCATION ACT 542

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH, THE—

GENERAL MEETINGS - - 543
METROPOLITAN BRANCH - - 548
NORTH-WESTERN BRANCH - 549
SOUTHERN BRANCH - - 550
SCOTTISH BRANCH - - - 550
CURRENT PUBLIC HEALTH LITERATURE - - - 551
NOTICES - - - - - xi, xii

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The Journal of the Incorporated Society of
Medical Officers of Health.

Vol. XVII. No. 8. May, 1905.

EDITORIALS.

MAGISTRATES AND THE PUBLIC HEALTH ACTS.

A recent number of the *Saturday Review* devoted an article advocating the provision of expert advisers to magistrates who have to hear cases under the Public Health and other Acts which a local authority has to administer. The article in question dealt solely with London magistrates, and shortly, the complaint seems to be that magistrates do not attach sufficient weight to the Sanitary Inspectors' evidence, even when backed up by that of the Medical Officer of Health; indeed, they are said to regard the Inspector as an interested witness led by professional zeal to exaggerate offences and minimize reparations. It is also suggested that they appear to fear that the Inspector may use his powers in terrorism over his neighbours; or that there may be inducement to corruption and blackmailing if they do not reserve a power to decide the matter in the spirit in which magistrates condone ordinary offences. The writer of the *Saturday Review* article therefore thinks it appears almost as if it would be necessary to take away this assumed discretion by providing an assessor who should make an independent report to the magistrates, who would be bound to accept it as conclusive.

The suggestion is by no means a new one; it has frequently been proposed that all courts should have experts attached, upon whom judges might call, and thus save much time and expense in not having to listen to expert testimony which very often appears to be in direct conflict. There is a good deal to be said in favour of such an arrangement in cases where surgical or medical opinion may readily vary, and in which it often requires an expert to give full weight to the opposing views; but with regard to the questions which come before a magistrate, this technical skill is not required to anything like the same extent, and the bulk of the cases can be decided by the exercise of his common sense. Of course, all magistrates, even stipendiaries, are not gifted alike in this respect; but it has always been conceded that justice is dispensed in our courts of first instance in a satisfactory manner. And in no courts is this more so than in those presided over by stipendiaries. Mistakes doubtless will occur, but that does not justify all magistrates being branded as incompetent, and we certainly deny that "all who have to do with the administration of the health laws are aware that the greatest obstacle to their enforcement is now the difficulties the London magistrate . . . . throws in the way of the officers of health authorities." According to the writer of the article from which we are quoting, it was not always thus: "In the days of a magistrate like Mr. Montagu Williams this was not so; the Acts were enforced strictly in their real sense, and not with misplaced leniency towards a class of persons who are not entitled to consideration." Our experience of metropolitan magistrates, both paid and unpaid, is probably of at least equal extent to that of the writer of the article, and we can assure him that although we have not always been on the winning side, we have no recollection of any case in which the magistrate has given his decision without careful consideration, and with a full sense of the importance of enforcing the law as it exists in favour of the promotion of public health. It must not be forgotten that the way a case is brought before a magistrate may have a good deal to do with the decision. A Health Officer looks at the case from one point of view, a lawyer from another; and as the matter is a legal one it is necessary that the facts produced for the consideration of the court are such as will satisfy the law in the minutest detail. If a case is presented which fails in this respect, it is ridiculous to complain if the magistrate dismisses it; but supposing that there are no defects of this kind, then the magistrate has to weigh the evidence for and against. One would almost think the *Saturday Review* writer wanted all evidence against to be ruled out. The representative of the local authority should certainly have his evidence as to actual conditions in such a form that it cannot be contradicted, but in addition he has also to give an opinion thereon. It is for the magistrate to say what value he places on that opinion; he may think the witness has given his evidence fairly and without any attempt (from professional zeal) to exaggerate, and he may regard the opinions he offers as both reasonable and cogent; or he may take the opposite view. A good deal depends on the witness.

We should not have devoted so much space to this subject had it not been that the Islington Borough Council have also brought the question before other sanitary authorities, expressing a similar hope that magistrates should be enabled to call in scientific sanitary experts to their assistance. That Council has been unfortunate with some cases taken before a particular magistrate; but because one, or even two or three magistrates do not appear to take an up-to-date view of public health matters is scarcely sufficient reason to justify the carrying out of the suggestion. To meet what would seem, even on Islington's showing, to be an exceptional state of affairs, freedom of appeal would be all-sufficient, and in the end much more satisfactory.

THE POSITION OF MEDICAL OFFICERS OF HEALTH.

The anomalous position of Medical Officers of Health in the provinces has been frequently discussed in these columns. The arguments which we have from time to time considered it our duty to put forward in favour of giving to extra-metropolitan Medical Officers of Health the same security of tenure of office as that which is possessed by their colleagues in London and in Scotland, have never been answered, and few attempts have been made to answer them, for the reason that they are unanswerable. We say emphatically and without fear of contradiction that the terms under which nearly all provincial Medical Officers of Health hold office can only result in delaying necessary sanitary improvements. Is there any other paid servant, either in the public services or in other walks of life, who is elected as these Medical Officers of Health are from year to year, with no certainty that they will be re-elected at the end of their term. We can quite understand the desirability in some cases of appointing an untried official in the first instance for a short period. His temperament might be such that he would not work harmoniously with his fellow officials or with the members of the particular sanitary authority he served, though elsewhere he might carry on his work without the least friction. But we do not understand the necessity for re-electing an official year after year for ten, twenty, or even thirty years in succession. There can only be one reason for doing so, and it is one we regret to say which is sometimes given by members of sanitary authorities, whose chief object in obtaining seats upon a public body is to secure some personal end. These individuals say frankly that they wish to keep a firm hold over their Sanitary Officers, and they hope to prevent any advice being given to the Authority which would be opposed to their personal interests, by insisting upon a periodical re-election, which carries with it a review as it were of the behaviour of the official concerned. Of the many instances which have been recorded in the columns of *Public Health* of Medical Officers of Health who have failed to secure re-election, sometimes after twenty or thirty years' service, there is hardly one in which any member of the electing body would have dared to move a resolution calling upon the officer to resign his post. But without the least compunction, and often with no other reason than the desire to conciliate a colleague on the Council, they elect some one else in his place who, with the experience of his predecessor before him, will decide that if he is not to meet with a similar fate he must be complacent, and do the very least that is required of him. The result of all this is seen in the state of many rural and small urban districts. There will be no permanent improvement in the housing of the poor; the dairies and cowsheds from which the towns are supplied with milk will remain in their present deplorable conditions, and water supplies to towns and large districts will continue to be polluted, until Sanitary Officials are allowed to report—and they can only report, they have no power to compel remedial alterations—without fear or favour.

The Public Health Bill which is being introduced into Parliament by the British Medical Association, and of which Dr. C. F. Hutchinson has charge, seeks to place all Medical Officers of Health in the same position as Poor Law Medical Officers have been for nearly fifty years, a position which no one would dream of attempting to upset—for the Board of Guardians can always get rid of an incompetent Medical Officer with the consent of the Local Government Board, but the reason for dismissal must be a valid one, and not merely capricious. Dr. Hutchinson's Bill politically is absolutely non-contentious, and is supported by many of the Labour Members of Parliament, who realize to the full that, as matters are now, the working classes are the greatest sufferers. That it will ultimately find a place among Public Health enactments we do not doubt, and we cannot but think that if the President of the Local Government Board would make careful enquiries into the whole question, he would either obtain for the Member for Rye facilities for bringing the measure before the House, or, better still, he would make it a Government measure. In making his enquiries we would commend to Mr. Gerald Balfour the very precise recommendation of the Duke of Devonshire's Inter-departmental Committee on Physical Deterioration, to the effect that in no case, unless convicted of misconduct, should a Medical Officer of Health be removed from office without the consent of the Local Government Board.

STANDARDIZATION OF DISINFECTANTS.—In the tender for disinfectants recently issued by the War Office, the following condition appears, *viz.*: "The Contractor guarantees that tested against *Bacillus typhosus*, taking carbolic acid as the unit, the (disinfectant) will give a co-efficient of not less than.........." [The Contractor to insert the exact co-efficient.]

THE CAUSES OF THE INCREASE OF AGRICULTURAL ANTHRAX IN GREAT BRITAIN.*

By SHERIDAN DELÉPINE, M.B. (Edin.), M.Sc. (Manchester),
Honorary Fellow of the Incorporated Society of Medical Officers of Health;
Professor of Comparative Pathology and Bacteriology and Director of
the Public Health Laboratory, Manchester University.

It is not my intention to deal with industrial anthrax in this communication, but only with anthrax as it affects the lower animals, and those human beings whose occupations bring them in contact with farm animals, or with their carcases. It will therefore be convenient to group this class of cases under the term "*Agricultural Anthrax*" to distinguish if from the category known as "*Industrial Anthrax.*" It may seem at first sight that the subject is not one of special interest to Medical Officers of Health; but the unusual number of cases which have come under my notice during the last three years has impressed me with the fact that agricultural anthrax is not a negligible quantity from the Public Health point of view, and that unless some better arrangements than those now prevalent are made to co-ordinate the work of all the authorities concerned in the prevention of disease in man and in the lower animals, it is quite possible that agricultural anthrax may become of greater interest to Sanitary Authorities than should be allowed. It was the discovery of a number of carcases affected with anthrax at the Manchester abattoir, that led me in 1903 to attract the attention of the Cheshire County Council to the probability of an increase of the disease in farm animals in that county. My warning has unfortunately been justified by subsequent events, and not only have numerous cases of anthrax occurred in cattle, but several farmers and butchers have in rapid succession contracted the disease.

In trying to find out the meaning of this local increase I have been led to enquire also into the causes of the alleged general increase of anthrax in Great Britain, and I hope that some of the facts I have collected may prove of interest. When I speak of general increase, I refer to the Reports of the Chief Veterinary Officer to the Board of Agriculture. In the report for the year 1903 (p. 14) he says: "*The continued increase in the number of outbreaks of anthrax returned in* 1903, *compared with any previous year, is not easy to explain.*" I may say that although there has been a distinct increase in the number of outbreaks during the last six or seven years, it must not be forgotten that, according to official statistics, the case incidence was greater during the year 1893 than in any subsequent years. (The returns for 1904 are not yet available.) With regard to industrial anthrax the

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* Read at Meeting of the Society of Medical Officers of Health, March 10, 1905.

Cheshire), Dr. Whitelegge, Dr. Vacher, Dr. Sergeant, Mr. A. Holburn

(Chief Veterinary Inspector at the Manchester abattoirs), Mr. J. Laithwood (Chief Veterinary Inspector for Cheshire), and lately Dr. J. Tatham; all these gentlemen have most willingly placed at my disposal valuable information in answer to my enquiries.

alone, Mr. Holburn, the Chief Veterinary Inspector of Manchester, detected several carcases of cattle affected with anthrax. To exclude any possible doubt, I confirmed his diagnosis by microscopical and cultural tests, as well as by inoculation of guinea-pigs. Such a marked increase in purely agricultural districts did not appear to be due to industrial processes.

In discussing this matter with those interested in the prevention of anthrax, I was struck by the importance attached by many to the share taken in the causation of anthrax by artificial manures, and manufactured foods prepared from imported products. This impression was probably produced by the publication of a certain number of cases during the past ten years. I may mention here a few of the first observations relating to this point. Semmer in 1895 discovered anthrax spores in hay imported from Southern Russia into Austria. Oubreaks of anthrax occurring in Germany have been traced to Russian grain. MacFadyean, in London, found that an outbreak of anthrax among horses was due to the use of infected oats coming from Russia, he also attributed other outbreaks of anthrax in cattle to the use of cake prepared with foreign produce. I have already alluded to Mr. John Spear's report upon industrial anthrax. The late Mr. W. Duguid, in the *Annual Report for 1891, of the Director of the Veterinary Department of the Board of Agriculture* (1892, p. 54) attracted special attention to the exceptional prevalence of anthrax in the West Riding of Yorkshire. Dr. John Henry Bell, probably on the basis of this report, stated at a later date that "the outbreaks of anthrax are most frequent in those counties of Great Britain where dry foreign wool, hair, hides, and skins are manufactured into goods." The same view is supported by Professor J. Wortley Axe, in a communication to the National Veterinary Association (Sept. 1903).

With regard to manure as a source of infection, it is obvious that blood, or other parts of carcases affected with anthrax, may be sent from the knacker's yard without being disinfected, and in this way the disease may be widely scattered. Actual cases of infection due to this cause have been reported by Nocard and L. Faucher. Mr. J. A. Gilruth, M.R.C.V.S., Chief Veterinarian in the New Zealand Department of Agriculture, attributes the introduction of anthrax into New Zealand to bone manure, which had been imported from Australia and India (*New Zealand Department of Agriculture, Division of Veterinary Science Report*, 1902-3, p. 286, also previous Report).

There can be little doubt that anthrax may be introduced from time to time into various districts by products imported from outside, but this does not prove that the majority of cases are infected in that way. This mode of infection does not fully account for the distribution of anthrax, nor for its persistence on certain farms or districts. It is also evident from the statistics published by the Board of Agriculture that the disease is very unequally distributed in Great Britain, some counties being almost free from it, while others are severely affected. These facts point to persistent local sources of infection, rather than to occasional importation by articles in common use.

In order to obtain comparable figures and information upon which practical deductions may be based, it is not sufficient to collect returns of the number of outbreaks which have occurred in each county or each agricultural division of Great Britain. Several outbreaks may occur in succession on the same farm in subsequent years, and this is not indicated in the published statistics. The number of cattle, sheep, and swine per acre is much greater in some counties than in others—the proportion of land used as permanent pastures or rough grazings, also varies in different counties. I have, therefore, found it necessary to prepare various tables from the official returns in order to make it possible to compare more accurately than has been done before the incidence of anthrax in various parts of the country.

In the Agricultural Returns for Great Britain, specially in those for the years 1895, 1897, 1899 and 1901, and in the Annual Reports of the Proceedings for the years 1897, 1898, 1899, 1900, 1901 and 1902, data are supplied from which it is possible to estimate the amount of grazing land, permanent pastures, and arable land, the number of farm animals per 1000 acres of land, and the number of outbreaks and cases of anthrax occurring yearly. From these data I have prepared tables giving the density of animal population in each county and agricultural division, the proportion of manured land to uncultivated land, the average yearly incidence of anthrax per 100,000 animals.

Anthrax statistics relating to cattle appear to be more reliable than those relating to other animals, probably on account of the importance to the farmers, and the greater chances of detection, of deaths from anthrax among cattle. For this reason I will refer only to the results I have obtained in connection with cattle. I will not, however, reproduce here my detailed tables, which would occupy too much space. The results may be summarized by the following short tables, in which the agricultural divisions are arranged successively in the order of: (1) the proportion of manured land; (2) the density of cattle population; (3) the average yearly incidence of anthrax per 100,000 heads of cattle (see also Diagram II).

TABLE II.—AGRICULTURAL DIVISIONS ARRANGED ACCORDING TO THE AMOUNT OF CULTIVATED LAND PER 1,000 ACRES.

	Cultivated or Manured land per 1000 acres of ground, 1897.	Per 1000 acres of Pastures.	
		Permanent Pasture.	Mountain and Heath Grazing.
7. West Scotland	163*	100	900
6. East Scotland	410	271	729
5. Wales	597	626	378
4A. Northern Counties	631	672	328
4B. North-Western Counties ...	697	788	212
2A. South-Eastern Counties ...	713	916	84
3B. South-Western Counties ...	750	870	130
1A. Eastern Counties	817	965	35
3A. West Midland Counties ...	824	957	43
2B. East Midland Counties ...	856	998	2
1B. North Eastern Counties ...	865	959	41

* Including permanent pasture and arable land.

TABLE III.—AGRICULTURAL DIVISIONS ARRANGED ACCORDING TO THE NUMBER OF CATTLE PER 1,000 ACRES OF LAND.

	No. of Cattle per 1000 acres of	
	Total Land, 1897.	Rough Grazing and Permanent Pasture.
7. West Scotland	51	80
6. East Scotland	86	203
1A. Eastern Counties	87	318
2A. South-Eastern Counties	91	236
1B. North-Eastern Counties	120	435
4A. Northern Counties	121	196
5. Wales	149	232
3A. West Midland Counties	150	281
2B. East Midland Counties	171	333
3B. South-Western Counties	183	371
4B. North-Western Counties	191	312

TABLE IV.—AGRICULTURAL DIVISIONS ARRANGED ACCORDING TO THE NUMBER OF CATTLE AFFECTED YEARLY WITH ANTHRAX PER 100,000 CATTLE.

	Anthrax average yearly incidence per 100,000 cattle per year. 1897-1902.
5. Wales	2·8
3A. West Midland Counties	4·5
4A. Northern Counties	6·5
7. Western Scotland	7·5
1A. Eastern Counties	8·
3B. South-Western Counties	9·1
4B. North-Western Counties	9·5
2B. East Midland Counties	10·1
2A. South-Eastern Counties	10·8
1B. North-Eastern Counties	12·3
6. Eastern Scotland	31·3

From a study of the distribution of anthrax in the various agricultural divisions, one is therefore led to the conclusion that in Great Britain the rate of incidence of the disease is not materially influenced by the geographical situation, density of cattle, or amount of manured land. This is made very clear by a comparison of maps in which the amount of manured land, the density of cattle, and the rate of incidence in agricultural districts and counties are indicated by various shades. A study of the returns published by the Board of Agriculture will also show that while there has been a steady increase of anthrax, there has been on the other hand a gradual diminution in the total amount of manured land.

With regard to the influence of industrial processes, one may also obtain some general impressions from a comparison of the rate of incidence of anthrax, and the character of the chief industries in the various counties. The counties where processes are carried on involving the use of hides, skins, hair, wool, bone, blood, etc., should, if cattle were frequently infected through these products, directly or indirectly, show a greater incidence of anthrax than those where such products are not frequently introduced.

In Table V. the counties are arranged according to the average yearly incidence of anthrax per 100,000 cattle during the six years 1897 to 1902 inclusive. The number of persons employed in the wool, hair, hides and skins trades, and the number of cases of industrial anthrax in each county during five years, are also given. The last two sets of figures have been taken from Dr. Legge's paper on industrial anthrax; although they do not cover all the industries dealing with material liable to infection, they indicate clearly enough the relative amount of suspicious material introduced into various districts.

From this list it will be found that Haddington, Edinburgh, Elgin, Aberdeen, Nairn, Forfar, Banff, Westmoreland, are the most severely affected counties, although most of them are comparatively free from those industries which may be reasonably considered as possible sources of infection. On the other hand Clackmannan, Peebles, Ayr, Lanark, the West Riding of Yorkshire, Cheshire, Wiltshire, Cumberland, Worcestershire, Nottingham, Gloucester, are only slightly or moderately affected, although more or less important wool, hair, hides and skins, leather, artificial manure works, are to be found within their confines.

There is nothing in the published statistics which I have analysed, supporting the view that the occurrence of anthrax is chiefly determined by the occasional introduction of infected food or manure into the districts affected; on the contrary, the grouping of large numbers of cases in limited districts indicates that certain regions become

TABLE V.—COMPARISON OF THE DISTRIBUTION OF PERSONS LIABLE TO INDUSTRIAL ANTHRAX AND OF CASES OF ANTHRAX IN CATTLE. (THE FIGURES FOR INDUSTRIAL ANTHRAX IN WALES ARE NOT GIVEN.)

Anthrax—yearly average number of cases per 100,000 cattle, 1897-1902.	County.	Area in 1897. Acres.	Number of Cattle per 1,000 acres of total land.	Agricultural Division.	Geographical situation. Relations to the chief watersheds.	Number of Persons employed in Wool, Hair, Hides and Skins trades.	Number of cases of Industrial Anthrax during the 5 years, 1899-1903.	Approximate number of Persons employed in Wool, etc., trades, per 10,000 acres.
0	Anglesey	175,836	292	V	North Wales	—	—	—
0	Carnarvon	365,931	152	V	North Wales	—	—	—
0	Denbigh	426,059	155	V	North Wales	—	—	—
0	Flint	162,381	216	V	North Wales	—	—	—
0	Merioneth	422,017	90	V	North Wales	—	—	—
0	Clackmannan	35,160	119	VI	Forth Basin	3,810	0	1,080
0·3	Radnor	301,164	104	V	South Wales	—	—	—
0·4	Cardigan	443,071	148	V	South Wales	—	—	—
1	Montgomery	510,111	139	V	North Wales	—	—	—
1	Peebles	223,295	82	VI	Lowland Hills (Central)	2,083	0	90
1	Inverness	2,784,884	19	VII	North Highlands	178	0	0·6
2	Durham	647,464	118	IVA	Basin of the Wear	909	0	10
2	Pembroke	392,710	225	V	South Wales	—	—	—
2	Ayr	730,525	138	VII	Lowland Hills (Western)	2,949	1	40
2	Kirkcudbright	528,251	83	VII	Lowland Hills (Western)	861	0	16
3	Oxford	480,688	116	IIB	Thames Basin	945	0	20
3	Shropshire	861,802	194	IIIA	Severn Basin	740	0	8
3	Monmouth	349,119	130	IIIA	Severn Basin	71	0	2
3	Yorkshire (North Riding)	1,361,117	125	IVA	Basin of the Ouse	105	0	0·7
3	Derby	652,261	210	IVB	Trent Basin	1,191	0	18
3	Bute	140,307	71	VII	Firth of Clyde	—	—	—
3	Stirling	296,928	116	VII	Forth Basin	654	0	20
4	Suffolk	948,765	72	IA	Eastern Plain	790	2	8
4	Middlesex	148,851	116	IA	Thames Basin	76	0	5
4	Berks	462,870	90	IIA	Thames Basin	—	—	—
4	Buckingham	479,360	148	IIB	Thames Basin	28	0	0·5
4	Gloucester	802,848	148	IIIA	Severn Basin	3,711	8	45

4	Devon	1,671,111	161	IIIB	South Water-parting	1,881	0	10
4	Cheshire	654,131	267	IVB	Dee, Weaver, and Mersey Basins	1,104	0	16
4	Glamorgan	516,959	100	V	South Wales	—	—	—
4	Kinross	55,649	122	VI	Forth Basin	180	0	30
4	Argyll	2,025,154	31	VII	North Highlands	17	0	0·08
4	Lanark	567,027	130	VII	Clyde Basin	4,598	9	30
5	Cambridge	553,251	90	IA	Wash Basin (Fen District)	189	0	3
5	Wilts	866,443	124	IIIA	Southern Water-parting	2,392	4	27
5	Hereford	538,984	162	IIIA	Severn Basin	123	0	2
5	Cumberland	970,161	148	IVB	Solway Firth Basin	1,286	0	13
5	Berwick	293,946	56	VI	Lowland Hills (Eastern)	299	—	10
6	London	75,442	81	IA	Thames Basin	4,210	63	561
6	Essex	979,584	85	IA	Thames Basin	158	0	1·6
6	Warwick	579,885	172	IIB	Severn Basin	1,447	0	25
6	Worcester	480,064	131	IIIA	Severn Basin	8,074	15	168
7	Nottingham	540,117	149	IIB	Trent Basin	995	0	18
7	Northumberland ...	1,289,854	83	IVA	Tyne Basin	348	1	2·6
7	Brecon	469,894	84	V	South Wales	—	—	—
7	Orkney	249,565	118	VII	Islands	—	—	—
8	Kent	976,305	78	IIA	Thames Basin	657	0	6
8	Rutland	97,273	177	IIB	Wash Basin	0	0	—
8	Somerset	1,039,711	214	IIIB	Southern Water-parting	2,976	7	28
8	Yorks, West	1,773,178	149	IVA	Ouse Basin	194,667	66	1,082
9	Huntingdon	233,977	123	IA	Wash Basin	0	0	—
9	Norfolk	1,314,503	94	IB	Eastern Plain	357	0	2·7
9	Carmarthen	587,816	197	V	South Wales	—	—	—
9	Caithness...	446,017	51	VII	North Highlands	45	0	1
9	Renfrew	155,965	169	VII	Clyde Basin	2,647	0	170
10	Lincoln	1,696,440	141	IB	Wash Basin	425	0	2·5
10	Hants	1,050,056	77	IIA	Southern Water-parting	309	0	3
10	Stafford	744,918	206	IVB	Trent Basin	930	0	12
10	Selkirk	172,426	17	VI	Lowland Hills (Central)	4,956	0	290
10	Dumfries	688,057	88	VII	Lowland Hills (South) (Solway Firth Basin)	1,115	0	16
10	Sutherland	1,345,480	9	VII	North Highlands	23	0	0·1
11	Leicester	532,788	246	IIB	Trent Basin	3,083	0	57
11	Roxburgh	428,527	40	VI	Lowland Hills (South)	3,258	0	76
(1)		(2)				(3)	(3)	(4)

TABLE V—*Continued.*

Anthrax—yearly average number of cases per 100,000 cattle, 1897-1902.	County.	Area in 1897. Acres.	Number of Cattle per 1,000 acres of total land.	Agricultural Division.	Geographical situation. Relations to the chief watersheds.	Number of Persons employed in Wool, Hair, Hides and Skins trades.	Number of cases of Industrial Anthrax during the 5 years, 1899-1903.	Approximate number of Persons employed in Wool, etc., trades, per 10,000 acres.
11	Ross and Cromarty	2,049,423	22	VII	North Highlands	29	0	0·1
12	Sussex	931,899	119	IIA	Southern Water-parting	138	0	1·4
12	Dorset	625,580	133	IIIB	Southern Water-parting	35	0	0·5
12	Linlithgow	77,186	158	VI	Forth Basin	28	0	3
12	Dumbarton	170,762	92	VII	Clyde Basin	242	0	14
13	Lancashire	1,200,979	192	IVB	North-Western water-parting	15,003	28	125
14	Bedford	302,954	101	IA	Wash Basin	107	0	3
15	Hertford	404,521	82	IA	Thames Basin	169	0	4
15	Surrey	461,808	94	IIA	Thames Basin	743	0	16
15	Cornwall	868,208	226	IIB	Southern Water-parting	156	0	1·8
16	Yorks, East	753,627	116	IB	Ouse Basin	884	0	11
16	Wigtown	314,405	158	VII	Lowland Hills (Western)	128	0	4
17	Fife	324,489	156	VI	Forth Basin	261	0	8
17	Kincardine	245,259	112	VI	East Highlands	106	0	4
18	Northampton	638,619	186	IIB	Wash Basin	1,061	0	16
19	Perth	1,632,782	48	VI	East Highlands	810	0	5
25	Westmorland	503,078	129	IVB	North-Western water-parting	544	0	10
32	Banff	405,482	108	VI	East Highlands	227	0	5
36	Forfar	562,162	94	VI	East Highlands	228	0	4
38	Nairn	104,245	62	VI	East Highlands	—	—	—
43	Aberdeen	1,268,705	141	VI	East Highlands	1,251	0	9
43	Elgin or Moray	308,499	75	VI	East Highlands	247	0	8
73	Edinburgh	236,588	90	VI	Forth Basin	1,516	0	60
65	Haddington	171,877	62	VI	Forth Basin	41	0	2
(1)		(2)				(3)	(3)	(4)

(1) Calculated from *Annual Report of Proceedings, etc., Board of Agriculture*, 1897–1902, inclusive.
(2) *Agricultural Returns, Board of Agriculture*, 1897, p. 86.
(3) "Industrial Anthrax, 1899–1903," T. M. Legge, M.D., *Transactions of the Epidemiological Society of London*, 1904 (New Series, XXIII.), p. 157.
(4) Calculated from data given in (2) and (3).

specially infected, and that the disease spreads from centres of infection intimately connected with these localities.

Unfortunately, the statistics upon which I base this statement are open to certain objections. They are admittedly incomplete, and there is no absolute guarantee that all cases returned as cases of anthrax are genuine cases of the disease. These objections can be made to any kind of statistics relating to any disease, but in the case of anthrax they have special weight, for the methods of notification and investigation are, in general, far from ensuring complete and accurate notification. This is admitted by the Board of Agriculture, and is also proved by various facts.

I have had the opportunity of examining organs obtained by Mr. Holburn, from animals affected with anthrax, and sent to the Manchester abattoir. In several of these cases the *discovery of the disease at the abattoir* was the first intimation that it had occurred on certain farms. Other instances have also come under my own observation in which the *occurrence of anthrax in man* has led to the detection of overlooked cases in cattle.

The occurrence of outbreaks of *anthrax in swine* without corresponding outbreaks in cattle is also a significant fact. Swine are usually infected through the flesh or offal of other animals that have died of anthrax, or been slaughtered on account of their being diseased. (It is also possible that pigs may contract the disease through eating mice or other vermin that have become infected by products derived from larger animals affected with anthrax.)

From this one would expect that when cases of anthrax in swine are notified as having occurred in a district, the returns should indicate also the occurrence of anthrax in other animals. But it will be noticed that, although this is generally the case, there are counties where the number of recorded outbreaks of anthrax is in excess of the total number of cattle, sheep, and horses affected, from which it must be inferred that swine were the only animals returned as affected in a certain number of outbreaks.

A few examples will suffice to make this point clear. As the official returns do not give the number of outbreaks for each kind of animal, it is necessary to arrive at the number of outbreaks occurring in swine alone by an indirect method. The number of outbreaks supposed to have occurred in swine alone must certainly be greater than the following table indicates.

Table VI. shows that during the six years, 1897-1902, there occurred in several counties 602 outbreaks of anthrax, of which at least 130 were supposed to have affected pigs alone. This number seems too large to justify the supposition that all these pigs had become infected through imported food or trade refuse.

TABLE VI.

Year.	County.	Total number of Outbreaks.	Total number of cattle, sheep and horses notified as affected with Anthrax.	Difference entirely attributable to *Outbreaks* of Anthrax in Swine alone.
1897	Cambridge, Isle of Ely ...	1	0	1
	Chester	4	3	1
	Essex	6	5	1
	Norfolk	5	2	3
	Northampton	20	19	1
	Notts	3	2	1
	Somerset	21	20	1
	Stafford	18	11	2
	Surrey...	7	6	1
	Wilts	6	4	2
	Yorkshire, West Riding ...	27	20	7
1898	Buckingham	4	3	1
	Cumberland	4	3	1
	Devon	22	15	7
	Essex	11	4	7
	Hants	5	4	1
	Hertford	7	4	3
	Lincoln, parts of Holland ...	7	5	2
	Notts	8	7	1
	Somerset	27	23	4
	Stafford	11	10	1
	Sussex	3	2	1
1899	Bedford	2	1	1
	Buckingham	5	4	1
	Cambridge	2	1	1
	Cumberland	5	4	1
	Devon	16	9	7
	Hertford	11	10	1
	Leicester	19	15	4
	Rutland	1	0	1
	Somerset	40	31	9
	Wilts	10	9	1
	Glamorgan	1	0	1
	Forfar	21	20	1
1900	Bedford	4	3	1
	Cambridge	3	1	2
	Cornwall	20	19	1
	Cumberland	6	5	1
	Derby	1	0	1
	Dorset	6	5	1
	Gloucester	8	7	1
	Kent	12	10	2
	Leicester	18	17	1
	Somerset	32	31	1
	Flint	1	0	1
	Montgomery	1	0	1
1901	Leicester	19	15	4
	Middlesex	2	1	1
	Norfolk	10	8	2
	Suffolk	8	3	5
	Wilts	10	7	3

TABLE VI.—*continued.*

Year.	County.	Total number of Outbreaks.	Total number of cattle, sheep and horses notified as affected with Anthrax.	Difference entirely attributable to *Outbreaks* of Anthrax in Swine alone.
1902	Cambridge	1	0	1
	Gloucester	9	7	2
	Hertford	10	5	5
	Middlesex	4	1	3
	Notts	3	1	2
	Somerset	30	24	6
	Wilts	8	7	1
	Worcester	9	8	1
	Midlothian	12	11	1
		602		130

This, as well as the very large number of swine affected with anthrax in Great Britain, suggests that a fairly large number of cases of anthrax in cattle and sheep have been and are being overlooked.

From the previous study of official returns I think one may safely conclude that the statistics do not support the views which have been expressed regarding the preponderating influence of imported artificial or prepared foods, manure, or trade refuse upon the increased prevalence of anthrax. On the other hand, the same statistics favour the view that there are infected areas in various parts of the kingdom. In order to obtain more definite information upon this point, it is necessary to study in detail the distribution of the disease in a single county.

Through the courtesy of Colonel Hamersley (Chief Constable for the County of Chester), I have been able to obtain particulars relating to 296 deaths of animals which were reported to have died from anthrax in the County of Chester during the last twelve years. I do not feel at liberty to give a detailed analysis of these cases here. Those anxious to study the matter will probably have the opportunity of doing so shortly in the report of the committee dealing with the question.* I may say, however, that the investigation of these cases led to exactly the same conclusions as the study of the distribution and rate of incidence of anthrax in other parts of Great Britain. The disease has greatly increased in the county during the last six years, and more specially during the last year. The rate of increase in cattle alone has been remarkable. On the supposition that the number of cattle has remained constant during the last twelve years, and that the average has been 176,000, the rate of incidence per 100,000 cattle in each triennial period has been approximately :—

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* *County Palatine of Chester, Memorandum on Anthrax, with various coloured charts and descriptive tables*, 1905. Philipson & Golder, Printers, Chester.

1893-1895 inclusive	2·07
1896-1898 ,,	3·6
1899-1901 ,,	6·6
1902-1904 ,,	over 15

It is impossible to explain such a progression by the occasional importation of infected manure, food, or raw manufacturing material, or to say that it is only apparent and due to better knowledge and improved notification. On the contrary, it is easy to explain it on the supposition that previous cases have acted as sources of infection for subsequent cases. This is entirely supported by the distribution of the cases, which shows that the disease has recurred with increasing frequency in limited areas, not always on the same farms, but on farms not far distant from each other. With few exceptions the infected areas are not situated in the immediate neighbourhood of works where suspicious materials are treated. In some 30 cases specially investigated, the only food common to all animals was derived from the farm ; 11 of the cases were fed entirely on farm produce. Artificial and imported foods came from various sources; not more than 6 or 7 of the cases at the most were given the same kind of imported or artificial food.

All these cases occurred during the winter months, so that they gave an opportunity to estimate the value to be attached to the fact that anthrax is often more prevalent during the winter months than during the warm season. It is often argued that as animals are so often infected at the time when they are supposed to be more or less entirely stall-fed, it is probable that artificial food is more likely to be the source of infection than farm produce. The series of cases just mentioned does not support this argument, for as I have stated, more than one-third of the animals were entirely fed on farm produce, and the animals which were not so fed were nevertheless partly fed on farm produce.

This evidence against the influence of manufactured food is supported by several investigations, which I have carried out in my laboratory. In connection with five outbreaks of anthrax which have occurred during the last three years in Lancashire and Cheshire, I have analysed bacteriologically eight samples of cake of home and foreign manufacture, and have found them all free from anthrax spores and bacilli.

I have also analysed four samples of oatmeal, suspected of carrying infection, and have found them free from anthrax bacilli and spores. To be conclusive, these observations require to be extended.

All the facts so far discussed tend to support the views which were generally accepted over twenty years ago, regarding the primary importance of infection of the soil. They do not exclude the possibility of the occasional introduction of the disease by imported foods or manures, but they indicate that these extraneous sources of infection are insufficient to explain the progressive increase of the disease in a locality.

It should be remembered that infection of the soil does not simply mean that of the fresh grass of pastures, but also that of hay, grain, and roots grown on infected fields, so that the infection of fields in a farm may involve the infection of much of the farm produce.

Much trouble has been taken to explain how the soil might or might not be infected by the bacilli present in carcases buried in the ground. It is not, however, from this source that infection is most to be feared, but rather from the superficial pollution of the soil: (*a*) by blood-stained discharges from dying animals, (*b*) by the blood of animals slaughtered on the farm, and (*c*) by the careless disposal of the blood, offal, and other parts of the carcase of such animals after slaughter at the farm, at private slaughter-houses, or small knacker's yards. Little danger is to be feared from carcases which are sent whole for inspection and disposal at a well conducted public abattoir, or a properly managed knacker's yard. The following information, which has been kindly supplied to me at my request by Mr. A. Holburn, is of special interest in connection with this point.

"Live cattle sent to the Manchester abattoir are usually kept for 24 hours, seldom for 48 hours, and very rarely longer, before being slaughtered. The lairage manure and other garbage are collected and mixed with cinders and sweepings. Much of the manure prepared in this way is sold to farmers and market gardeners in the northern districts of Cheshire. (It appears that the manure does not go further south than Knutsford and Chelford.)

"Condemned carcases are all burned up in the destructor, as are also the confiscated carcases, except a few which are boiled down in a tank for the purpose of extracting fat. This fat is used for lubricating purposes, and also for making candles and soap, which are used chiefly in the abattoir.

"The parts of the carcase which the butchers do not keep are disposed of by them as follows:—

"*Hides and skins* are sold to hide and skin dealers, from whom they are bought by tanners.

"*Trimmings, horns, skulls, etc.*, are disposed of in various ways; a great part of them ultimately go to the manure works.

"*Bones* are generally treated for the extraction of fat and gelatin, at fat, soap, and glue works, before they reach the manure works.

"*Fat*—Suitable fat is used by margarine makers; the fat not suitable for this purpose goes to other fat works and soap manufacturers.

"*Bellies and feet* are bought by tripe dressers.

"*Bowels* are cleaned generally by gut cleaners at the abattoir. They first separate the gut from the mesentery. The guts are then cleaned and scraped to make sausage skins. The scrapings go with the garbage.

"*Blood* is allowed to clot. The serum is separated, and is used for various trade purposes. The clot is treated with a little sulphuric acid, dried, and sold to manure manufacturers."

It is therefore most improbable that a cow suffering from anthrax would remain in lairage, be slaughtered, and its carcase examined by an experienced Veterinary Inspector, without the disease being detected; but on the supposition that this had occurred, it will be seen that there is very little chance of any part of its carcase becoming a source of infection to a farm. The excreta and gut scrapings, with some blood, are undoubtedly mixed with a large amount of lairage manure, garbage, cinders, road scrapings, and, in this way, a few surviving spores may reach a farm. But, as I have already said, the supervision exercised at a large public abattoir, renders this most improbable.

The various parts, such as the blood, bones, offal, etc., before they are made into manure and used on the farm, have to pass through a series of processes, which should be fatal to the most resisting germ, if properly carried out.

When no attempt is made to sell a diseased animal or carcase for meat, it is either buried, or sold to the knacker.

The following extract from one of Mr. Holburn's letters is also of interest in connection with the treatment of animal products at knackers' yards:—

"I have visited the yards of Dean & Wood, Limited, Knackers, Miles Platting and Bradford. They do the slaughtering at Miles Platting, and boil the flesh of fresh carcases, according to demand, for cat's meat. All the offal and the carcases of stinking animals are chopped up and sent to the Bradford yard, where they are put in a digester, where flesh, bones, skulls, hoofs, etc., are reduced to a kind of pulp. (The bones are quite soft when they come out). The pulp is mixed with soot and other materials, and made into a manure of great value. Mr. Dean states that this manure is not used by farmers, but by florists and horticulturists."

It is probable that knackers receive a number of carcases of animals, including cows, that have died of anthrax.

From this account it appears to me that after being treated at a well-conducted knacker's yard, an anthrax carcase ceases to be a source of danger. Unfortunately, under the present conditions of transit, such a carcase may be a serious source of infection between the farm and the knacker's yard.

When diseased animals are slaughtered at farms or private slaughter-houses, or dead animals are sold by farmers to butchers, proper precautions are seldom, if ever, taken. The animal is often bled and skinned in the field or stable; the offal, and sometimes the whole carcase, when unsaleable, are buried carelessly, or thrown upon a midden, contaminating manure, which may afterwards be used in the neighbourhood. Part of the offal may be used to feed swine, causing the death of some, and a further source of infection. The blood may be used to manure fields. Or else the farmer may sell the carcase to the small knacker man, who buys it for its hide, buries what he does not want, or allows it to decay in order to obtain the bones, which he sells to manure manufacturers. Whilst the infected débris lie about, rats, mice, and other vermin have access to it. Rats, though not very liable to anthrax, may possibly disseminate the disease through their excreta. Mice are certainly liable, for after two, three, four, or five days, a certain proportion of the mice I have fed on the organs of animals dead of anthrax or on food contaminated with spores, have died from the disease. The spots where infected mice die may therefore become infected also. Experiments upon the liability of various kinds of mice and other vermin are needed before a proper estimate of their share in the dissemination of anthrax can be arrived at.

Of all the facts referred to in this paper, those relating to the thoughtless or illicit disposal of carcases by farmers, butchers, and knackers, seem to me to explain best the course which anthrax has taken in various districts after once the disease had been introduced; and these mischievous practices can only be carried out where cases of anthrax are accidentally overlooked or wilfully concealed.

These are the only facts which explain why the disease has clung to certain localities, without remaining confined to a very limited number of farms, for they show how the disease can be spread from farm to farm.

It might be thought that I am exaggerating the share taken by overlooked or concealed cases of the disease; but there is ample evidence that such cases are not rare, and, although only a small proportion of these are likely to be referred to me, several have come under my personal observation during the last few years.

I will refer to only two of these cases by way of example :—

1. *Levenshulme case.*—This case shows well how diseased carcases are disposed of privately, to the danger of the public, and of the farmers and butchers themselves. The following is an abstract of the account which appeared in the *Manchester Guardian*, on March 23rd, 1904 :—

" Information was laid by Mr. J. E. Lord, an Inspector of the Urban

District Council of Levenshulme, under Sections 116 and 117 of the Public Health Act, 1875, against the defendant Clarke, for having prepared and having in his possession diseased meat for sale. The heifer in question was on the farm of a man named Pimlott, of Green Bank, Levenshulme. On the 23rd February, it was observed to be ill. Next day some medicine was given to it, but it did not improve. Pimlott about mid-day bled it to death, in other words, killed it, when it was in a dying condition. There was a question whether the beast was not actually dead when Pimlott used the knife. The defendant had not seen the animal up to that time. Instead of going to inspect it he, at Pimlott's request, sent a man named Cresswell, a journeyman butcher, to dress it. Cresswell, in the course of doing this, noticed that the spleen was enlarged. Later in the day he called Clarke's attention to it. Nothing, however, was done, and Clarke having agreed to purchase the carcase, it was removed to the defendant's shop. The matter ended there so far as Clarke was concerned. On March 3rd, Pimlott found an eruption on his arm. He went to the Royal Infirmary, and two days later the case was diagnosed as one of anthrax. The man was advised to go into the Monsall Hospital. He declined, however, and went home. The Manchester authorities then communicated with the District Council of Levenshulme, and they sent their Medical Officer to see him. Meanwhile, Cresswell (who had also contracted the disease) had been sent to his home at Wheelock, near Sandbach. He was brought back to Manchester and sent to the Monsall Hospital, where he was still under treatment for anthrax, but was progressing favourably. Pimlott's case being certified by Professor Delépine as one of anthrax, steps were taken to isolate the farm in order to avoid further contagion. On the Monday following, Pimlott died. The Inspector saw Clarke, and ascertained from him that the whole of the beast had been sold except the tongue, which was then in pickle along with other meat. The Medical Officer was informed of this, and he and Lord visited Clarke's shop and seized the tongue, together with other tongues and meat in contact with it, and the whole was handed to Professor Delépine for examination."

I need not give here in detail my report. It will be sufficient to say that I found anthrax bacilli, still living, in one of the tongues.

"The infected tongue was afterwards destroyed under a magistrate's order. If the Bench found that Clarke had been guilty of negligence, he should ask them to penalize him, and also to grant special costs.

"Mr. Cobbett (for the defence) said the facts were not in dispute. The defendant pleaded guilty, but the facts did not establish any gross culpability. The beast was found to be ill on February 23rd, on the 24th it was slaughtered, showing that, whatever the disease was (and he assumed it to be anthrax), it ran its course rapidly. Of those facts the defendant had no personal knowledge. But on the 24th Pimlott saw him and said that he had 'a nice young heifer,' which had not been very well, and that he had slaughtered it. There was at first no question of Clarke's buying the carcase. Cresswell was sent, at Pimlott's request, to dress the carcase, and it was only upon hearing Cresswell's report—for up to that time he had not seen it himself—that the purchase was concluded. Cresswell's statement was that the only thing he could see at all the matter with the beast was that the spleen was enlarged, otherwise it was in excellent condition. There was nothing to indicate to Clarke that his man was making a mistake. The rest of the facts needed no comment. The carcase was bought by Clarke, no doubt, for something less than he would have had to pay in the market; but in the circumstances that would hardly be wondered at, and as the Bench had heard, it was all sold to the public in the ordinary course of business except the tongue."

This case shows clearly what protection the public can expect from inspection of carcases by the butcher; for, although Cresswell attracted Clarke's attention to the swelling of the spleen, which is a characteristic sign, the latter concluded the purchase without further investigation. (An account of this case by Dr. Edlin, has previously appeared in *Public Health.*)

2. *Bexton case.*—This second case is particularly instructive, and shows how cows dying of anthrax are often disposed of, and the fact concealed from the proper authorities as long as possible.

William Fletcher, aged thirty-two, a hawker, residing in Altrincham, was seen by Dr. Herbert F. Ransome on the 2nd of August. He was obviously ill, and had a suspicious bleb on the left forearm. On the 3rd he was admitted to the Bowdon Hospital, the bleb took the character of a malignant pustule, and the symptoms of general infection rapidly appeared. The man died on the 4th. The clinical symptoms pointed clearly to anthrax, and I was able to confirm the diagnosis by a bacteriological examination of the blood. The history given by the patient and his brother to account for this illness was as follows:—

On the 30th July they had together collected bones from various butchers in Altrincham. These bones were taken by the deceased to Messrs. Vickers, of Newton Heath, on the morning of the 2nd of August, and on the same day he became ill. It was supposed that he had been infected by the bones collected three days before. This was possible only on the supposition that the illness had run an exceptionally rapid course. I suspected that the man had probably buried some animal that had died from anthrax, but this was denied by the man's brother, although there was a vague story that the two brothers had buried somewhere a cow which had been bought from a farmer.

The police had at first some difficulty in obtaining information, but in a few days they found evidence that the man had buried more than one cow at the farm of Mr. Ralph Hough, at Bexton, near Knutsford, during the last week in July. Between the 9th and the 12th of August, 1904, three more cows died at the same farm, and on examination of the blood of one of these cows I found it contained numerous anthrax bacilli. It is probable that but for the death of Fletcher nothing would have been heard of the previous cases that had occurred at the farm, and it is possible that the second outbreak would have also been concealed. It is probable that Fletcher dealt in hides as well as in bones. From Bexton to Newton Heath is a considerable distance, and the carrying about of infectious products without precautions may account for the infection of districts which had been previously free from the disease.

3. *Thornton Farm case.*—Dr. Sergeant has also reported lately (Dec. 1904) upon an outbreak of anthrax investigated by Dr. Coutts, Medical Officer of Health for Blackpool, and affecting two cows and one bull, and causing the infection of two butchers, who contracted malignant pustules. One of these cases terminated fatally.

Nothing, perhaps, indicates better the frequency of cases which are concealed or which are accidentally overlooked, than the number of cases which have been detected at the Manchester abattoir by Mr. Holburn.

Between June, 1903, and April, 1904, Mr. Holburn sent to my laboratory the organs of ten cows or bulls affected with anthrax. The nature of the disease was proved in each case by microscopical examination, by the separation of the bacillus in a state of pure culture, and the inoculation of guinea-pigs and mice.

It is clear that these carcases would not have found their way to the Manchester abattoir had anthrax been notified, as it should have been. The detection of the disease at the abattoir is proof that anthrax had not been previously diagnosed, or that its existence had intentionally been concealed. For every carcase reaching a public abattoir there are probably many more which are disposed of privately or buried surreptitiously.

I have so far referred only to those cases which do not come to the knowledge of authorities owing to negligence or concealment. There are, however, a few cases which remain undetected owing to the failure of certain methods of diagnosis. It is therefore important to know the causes of failure, in order to avoid them whenever possible.

The symptoms of anthrax are not the same in various kinds of animals, nor are animals of the same kind always affected in the same way. In some cases the disease runs a rapid course, and the animal dies before the veterinary surgeon is able to see it. In other cases the disease runs such a slow course that the suspicion of anthrax is not aroused.

An account of the symptoms would be out of place in this paper, but in connection with a discussion of preventive measures a knowledge of the duration of the illness is desirable.

In every kind of animal the illness may either run a rapid course (acute or very acute anthrax), or a slower course (sub-acute anthrax).

Cattle.—The onset of noticeable symptoms may sometimes be followed by death in one or two hours (anthrax acutissimus), but more usually in from twelve to twenty-four hours (anthrax acutus). In the sub-acute type of the disease death may take place in from two to five days after the illness has become evident.

Horse.—*Acute type*, duration of illness, eight to thirty hours; *sub-acute type*, two to three days.

Sheep.—Death may occur in a few minutes, apparently without previous warning. In acute anthrax death generally follows the onset of symptoms within twelve hours. In sub-acute anthrax the animal may live for two or three days.

Pig.—The duration of *acute anthrax* is from twenty-four to thirty-six hours. *Sub-acute anthrax*, four to six days.

In addition to the difficulties arising from the variable duration of the illness, there are others which are due to the close resemblance of the symptoms associated with certain intoxications and septicæmic diseases.

I had quite recently a remarkable instance of difficult diagnosis. A valuable horse, apparently well, on being made to run was suddenly taken ill, fell, and appeared to be in such pain that it had to be killed. The suddenness of the symptoms, and other circumstances, suggested poisoning. After death the mucous membrane of the stomach was found intensely congested, hæmorrhagic, and ulcerated at places. The impression produced by the symptoms and lesions led to an investigation into the nature of the poison. I was requested to have a search made in my laboratory for various irritant poisons, and specially for arsenic, which often produces in the stomach lesions similar to those observed in this case. This was done without any appreciable trace of poison being found. But the appearance of the stomach suggested also anthrax, and on making a microscopical examination I found all the blood-vessels absolutely full of anthrax bacilli. On enquiry, I also ascertained that the spleen was of unusually large size and soft.

It is important to remember that between the moment when an animal has partaken of infected food, and thus become infected, and the time when the symptoms indicate that it has become ill, there is a period during which there is no external sign by which the farmer or the veterinary surgeon can tell that the animal is infected. This period of infection without symptoms (incubation period) may be of importance in connection with the dissemination of the disease, for an animal may, during that period, be transferred from one farm to another without the farmer suspecting the animal to be suffering from the disease. I am not acquainted with any observation or experiment showing whether the excreta are infectious or not during that stage. The extreme limit of the duration of the incubation period of anthrax has not been well determined in the case of all domesticated animals, but experiments made on sheep and various experimental animals prove that it is variable.

Sheep fed on clover contaminated with anthrax spores may live for eight or ten days after that meal. (All the sheep submitted to such an experiment do not die, unless the quantity of spores is considerable. When the quantity of spores is moderate, as many as half of the sheep may escape infection.) So that an infected sheep may carry in its body the germs of anthrax for about a week or more without showing any evidence of the disease. Animals under observation in the laboratory may remain apparently well after subcutaneous inoculation or feeding with virulent material, till a few hours before death. I have made over 100 observations upon this point, and have always found that the period during which symptoms are manifest is always very much shorter than the period of incubation.

Thus a mouse dying twenty or twenty-four hours after inoculation, seldom shows any symptoms such as would attract attention under ordinary circumstances, till the sixteenth or twentieth hour after inoculation.

A mouse dying in 48 hours may appear well for over 40 hours after inoculation.
„ „ 72 „ „ „ „ 60 „ „ „
„ „ 96 „ „ „ „ 80 „ „ „

The same thing is noticeable in mice fed upon food infected with anthrax bacilli with or without spores, but death occurs usually after a period of from 50 to 120 hours. Results of the same kind were obtained in the case of guinea-pigs and rabbits, only guinea-pigs seldom die in less than thirty hours, and generally live for two or three days after subcutaneous inoculation in one of the posterior extremities. Rabbits usually live three or four days after inoculation.

Irregularities are observed when the virulence of the products investigated has been modified by keeping under various conditions. When virulent cultures and young animals are used, the results are much more uniform, and it is then found that mice seldom survive more than one day, guinea-pigs two days, and rabbits three days.

I have observed an exceptional case of chronic anthrax or latent infection in a guinea-pig, which I had inoculated with spores nearly two years old. The animal did not seem affected in the least for three weeks, but at the end of that time it was found dead in its cage, and on post-mortem examination I found a fair number of active virulent anthrax bacilli in the spleen.

From the facts previously recorded, it is obvious that with our present methods of diagnosis it is not often possible to discover in a herd those animals which are affected with anthrax long before their death, and that it is not usually possible to obtain veterinary advice before that event. It is also clear that of several animals infected at the same time, some may die several days, and, possibly, one or two weeks after the others.

A possible source of error in diagnosis is the fatality of anthrax in the case of pregnant cows. When a cow is in calf and becomes affected with anthrax, abortion may take place before the death of the cow. The cow appears, therefore, to die from the effects of abortion, and anthrax may remain unsuspected. Two cases have come under my notice in the course of last year, in which this combination had occurred. The farmers were under the impression that these cows had died of parturient fever following abortion. It was only the examination of the internal organs by a Veterinary Inspector that led to the suspicion of anthrax, and on bacteriological examination I found in both cases that anthrax bacilli were present in the blood and various organs, which had also all the usual characters associated with anthrax.

I have had lately another instance of a combination of circumstances making diagnosis difficult. Several cows were inoculated with tuberculin, and some of them died. The death was supposed at first to have been due to the tuberculin injection, but as it was found on examination after death that the animals had contracted anthrax, it was thought that the tuberculin was contaminated, and contained anthrax bacilli or spores. I examined one part of the fluid and found it free from anthrax bacilli or spores. The same results were obtained in two other laboratories, one in England, and one in France. The syringe used had been sterilized by the veterinary surgeon between the injections. It must therefore be assumed that the animals that died were already affected with anthrax at the time of the injection, or contracted the disease about the same time. These cases were observed in a district where other cases of anthrax had occurred.

When the organs of an animal dead of anthrax are examined soon after death, the appearances presented by the blood, the spleen, lymphatic ganglia, and muscles are generally characteristic enough in typical cases of anthrax. It must be, however, remembered: · (1) That in a few cases lesions are not typical; (2) That the symptoms may suggest some other cause of death, as in those cases of abortion and of suspected poisoning which I have previously mentioned; (3) That when there is a suspicion of anthrax *it is contrary to the directions of the Board of Agriculture to make post-mortem* examination.

Post-mortem microscopical diagnosis, although generally satisfactory, is not always so easy to carry out as is generally believed. Immediately after the death of an animal affected with anthrax, the blood is found on microscopical examination to be full of bacilli, which are quite easily seen with an ordinary microscope, and which, when suitably treated and sufficiently magnified, have characters which leave little doubt as to their nature. This method of diagnosis is, however, reliable only in the hands of a good microscopist having at his disposal a good microscope.

When an animal has been dead some time, and decomposition has begun, the bacilli begin to undergo degenerative changes, and are associated with other forms of bacteria; even a bacteriologist of experience may then find some difficulty in making an accurate diagnosis. I have occasionally met with difficulties of this kind. Well-known bacteriologists such as Nocard, Carl Fränkel, and others, have also insisted upon the danger of relying entirely upon microscopical examinations in such cases as I have mentioned. When the bacteriological examination has been postponed too long, it may be impossible to find the bacillus anthracis. Professor MacFadyean has recommended the use of a methylene blue solution of suitable kind for the purpose of increasing the accuracy of the microscopical diagnosis. The peculiar red reaction, which he has described carefully, is in his opinion quite characteristic.

Inoculation of susceptible animals, such as mice and guinea-pigs, is absolutely reliable in recent or uncomplicated cases, but when the anthrax bacillus is associated with some other bacteria, the inoculated animals occasionally recover. The separation of the bacillus by cultivation methods is probably the most reliable method of diagnosis, but it is also difficult in certain cases.

The microscopical and bacteriological methods of diagnosis, although generally simple enough, become at times complicated and difficult, so that some of the cases are liable to be overlooked when simple tests are entirely relied upon. The difficulty increases rapidly with the length of time which has elapsed after the death of the animal.

Therefore, although there are few diseases in which it is possible to obtain more accurate *post-mortem* diagnosis than in the case of anthrax, *it is impossible to rely entirely upon negative results, unless each case is thoroughly investigated* by the best methods available.

CONCLUSIONS.

Putting aside the causes which lead to the occasional importation of the disease, I am convinced that the chief *cause of spread of infection in a locality* is the concealment or overlooking of cases of anthrax. The remedy against this appears to be a more complete system of notification. One of the defects of the present system of notification is, that it is often based entirely upon the opinion of the farmer. The nature of many fatal cases is not obvious, and the farmer cannot be expected to recognize always the nature of cases, which experts may find it difficult to diagnose. There seems only one way to overcome this difficulty, and that is to enforce the *notification of all cases of deaths from acute illness*, or any other cases *which cannot be clearly accounted for by ordinary accidents;* cases of illness which render *slaughter at the farm* necessary, should also be notified (this of course does not refer to accidents the nature of which is obvious). The present method of notification as applied to anthrax, seems to be very simple, and might easily be rendered more efficient. I will therefore indicate how the present system might, in my opinion, be improved.

To ensure rapid notification the farmers or veterinary surgeons notifying cases should be entitled to some small *notification fee*, in addition to which the farmer should have the prospect of obtaining some *compensation for the losses which measures of a precautionary type* may involve. Slaughter not being necessary for preventive purposes, and being actually objectionable, there should be no question of compensation in that respect. It is not easy to suggest how under the present arrangements the funds necessary for the purpose of protecting farmers against losses from disease and death could be found by county authorities without the introduction of a system of insurance.

On the other hand, farmers or veterinary surgeons neglecting to notify cases, should be liable to a penalty, which should be severe in cases of wilful concealment.

The Veterinary Inspector, recognized by the Authority for the purpose, should give to the owner or farmer a certificate of death, stating clearly whether the carcase (described in the certificate) can be sold for certain stated purposes, or must be destroyed under supervision.

All carcases of animals dead of anthrax should be disposed of according to the methods recommended at present by the Board of Agriculture, until some equally efficient and more economical method is recognized by the Board. Burning is recommended by the Board as the safest method, when carried out properly, but in certain localities it is very expensive.

The slaughter of animals or disposal of carcases in places not licensed for the purpose (and therefore not subject to frequent inspection), should be entirely forbidden. A butcher, knacker, or manufacturer, should not be permitted to buy a carcase at an unlicensed place without seeing the certificate of death. The carcase should not be used for any other purpose than that indicated on the certificate. Any neglect of these precautions should entail a penalty.

The occurrence of anthrax on a farm may be indicated by a farmer, butcher, knacker, etc., contracting the disease. It is possible also that some of the cases of anthrax occurring at works where animal products are dealt with may be due to home products. (They are usually attributed to imported raw material.) It is therefore desirable that the County Authority should be made acquainted, without delay, with any case of human anthrax occurring in any district receiving farm products, live animals, or carcases from any part of the county. For the same reason the Authority should be made acquainted, without delay, with the detection of anthrax carcases at any abattoir. This is done, I believe, at present, in a certain number of cases, but I think that it might be done more systematically, and that Sanitary, Factory, and Market officials should be clearly indicated the course they have to follow when such cases occur.

It is also important that the District and the County Medical Officers of Health should be informed without delay of the occurrence of outbreaks in various parts of the county, and I believe it would be of advantage to every one concerned if he were provided with a copy of the report of the Veterinary Inspector. The Factory and the Markets Inspectors of Districts or of towns concerned in the matter should be made acquainted with districts where anthrax has broken out, so that special care should be exercised in inspecting carcases and animal products coming from those districts.

I believe that investigations co-ordinated in this way would cause a diminution in the number of overlooked and concealed cases, and allow the actual source of infection to be discovered in many cases. The data obtained would gradually improve our knowledge of this and other animal diseases, and permit of the more effective application of preventive measures. With a view of improving our knowledge of infectious diseases of the lower animals, and of encouraging the farmers and stock owners to assist the Authorities in their preventive work, I have recommended elsewhere the establishment of destruction stations for the better disposal of carcases (see Report to the Cheshire County Council).

It may be thought that I have dealt too exclusively with anthrax as it occurs in animals, and that I should have paid more attention to human anthrax. It is, however, evident that with the exception of the recent practical application of the *serum anticharbonneux* to the treatment of the disease, there is nothing specially new to say about agricultural anthrax in man. Valuable work has been done by the Factory Department of the Home Office upon industrial anthrax, and it can be confidently expected that under the control of the Chief Inspector of Factories no permanent increase of anthrax is likely to occur through the importation of infected raw material. On the other hand, if anthrax continues to spread on our farms, it is to be expected that cases of *human agricultural anthrax* will become more frequent. The number of cases which have occurred in Lancashire and Cheshire during the last two years seems to justify this prevision. I have therefore attempted to indicate how anthrax spreads among cattle in this country, in order to show the need of greater co-ordination in the work of the Sanitary, Agricultural, Factory, Markets, and Police Authorities, which are all interested in the prevention of anthrax both in man and animals.

Sources of Statistical Data.

(*a*) Number of cattle, sheep and swine per 1,000 acres.—*Agricultural Returns for Great Britain, 1897*, page 44.

(*b*) Number of cattle, sheep, swine and horses affected with Anthrax and number of outbreaks.—*Annual Report of the Proceedings under the Diseases of Animals Acts, 1897, 1898, 1899, 1900, 1901, 1902, 1903.*

(*c*) Area of Counties, Plantations, Grazing Grounds, Permanent Pasture and Arable lands.—*Agricultural Returns for Great Britain, 1897, 1899.*

(*d*) Number of persons dying from Anthrax.—*Annual Report of the Registrar-General of Births, Deaths and Marriages in England and Wales, 63rd, 64th, 65th, 66th Reports.*

(*e*) Number of persons affected with Industrial Anthrax, and number of fatal cases.—*Annual Report of the Chief Inspector of Factories and Workshops, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903.*

(*f*) Number of persons employed in wool, horse-hair, hides and skins works.—*Industrial Anthrax, by T. M. Legge, M.D., Transactions of the Epidemiological Society of London, XXIII., 1904*, page 158.

DISCUSSION.

The President (Dr. J. F. J. Sykes) expressed the indebtedness of the Society to Professor Delépine for bringing forward the subject, with which but few of their members were well acquainted. A communication had been received from Dr. Legge, who was unable to be present, and he would ask the Hon. Secretary to read it to the meeting before proceeding with the discussion.

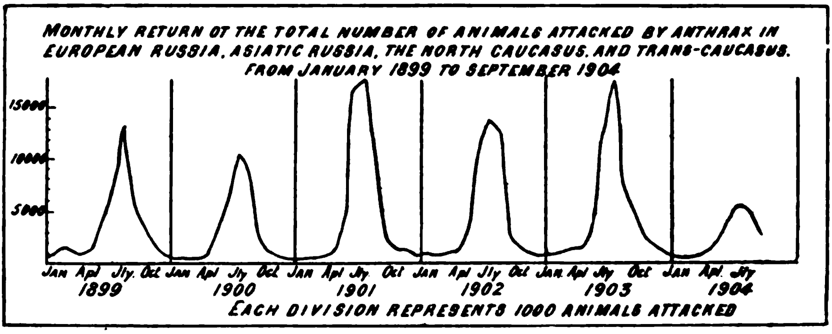
The Hon. Secretary then read the following letter:—

Dear Dr. Sykes,—Knowing well Prof. Delépine's article on Anthrax in the *Encyclopædia Medica*, and having myself for some years paid much attention to the subject in man, it is matter of sincere regret that I cannot take part in the discussion to-night owing to a previous engagement.

I think we are coming more and more in explanation of the occurrence of anthrax, both in animals and man, as Prof. Delépine says, "to support the views which were generally accepted over twenty years ago regarding the primary importance of infection of the soil." And as he includes under "infection of the soil" the fresh grass of pastures, and of hay, grain, and roots grown on infected fields, I see little antagonism between his views and those of Prof. MacFadyean, who considers that a considerable number of cases (in animals) in this country may be due to artificial foodstuffs of which the raw material is derived from a foreign country.

I may be allowed to differ from Prof. Delépine's view that, with the exception of the anti-anthrax serum treatment, there is nothing specially new to say about anthrax in man, because it is just on this point of the relation of soil infection to human anthrax that new light is being thrown. Thus, among the 261 cases reported to the Chief Inspector of Factories during the six years 1899–1904 inclusive isolated cases occurred: (1) To a corn bandsman, *i.e.* to a man in a grain warehouse superintending the discharge of grain from the ship on to the endless band by which it was conveyed to the different floors; (2) To a grain dealer; (3) To a man employed in carrying sacks of potatoes in a Bristol warehouse; and (4) In a fruit warehouse in the London Docks, where the foreign fruit arrived packed in hay. As bearing upon the third case I would cite an instance from the official German report on animal diseases, in which six oxen out of a shed containing 100 animals succumbed to anthrax after consumption of raw potato-skins which had been given to them alone.

In seeking for reasons to explain why the cases of anthrax in the human subject were almost invariably traced to either wool from Asia Minor and Persia, or horsehair from Russia, Siberia, and China, or hides and skins from China or the East Indies, I believe I have found a clue in the large official figures of anthrax in animals in Russia and Siberia. These numbered in 1903, 47,300 and 4,200 respectively. But the law which underlies the whole question is brought out by distributing the cases month by month over a period of years, as is done in the following curve:—


MONTHLY RETURN OT THE TOTAL NUMBER OF ANIMALS ATTACKED BY ANTHRAX IN EUROPEAN RUSSIA, ASIATIC RUSSIA, THE NORTH CAUCASUS, AND TRANS-CAUCASUS. FROM JANUARY 1899 TO SEPTEMBER 1904

EACH DIVISION REPRESENTS 1000 ANIMALS ATTACKED

Until March of each year there is practically no change in the incidence; there is then an enormous development of the disease, reaching its maximum in July and August, followed by a rapid fall in September and October. In Great Britain there is curious contrast to this, as the number of outbreaks is less in the third quarter than in the other three-quarters of the year. The only explanation of these facts is to be found, I think, in seasonal variation in temperature, and all that this means in changes of the soil and vegetation which will allow of the saprophytic development of the anthrax bacillus in the upper layers of the soil. The resemblance of the curve to that of the curve of summer diarrhœa is striking, and I am tempted to push the analogy further and to say that the temperature of the soil accounts for the seasonal prevalence of both diseases. Nor must one forget as links in the chain of creating anthrax districts in Asia the part played by insect and bird life and by dust storms.

I have prepared Tables (*Transactions of the Epidemiological Society* for 1904, pp. 157, 181) to bring out the same point Prof. Delépine makes, that although in some instances outbreaks in animals are the direct result of pollution of streams from factories or of infected trade refuse used as manure, the evidence, when closely examined by working out the number of cattle attacked in each county as a proportion on the number of cattle, negatives the assertion that bovine anthrax is most frequent in the counties where dry foreign wool, hair, and hides are manipulated. Indeed, incidence appears greatest where danger from factory conditions seems most remote.

I may, perhaps, refer to one of the conclusions in the paper. I wish very much that, just as there is notification of anthrax contracted in a factory or workshop, notification was compulsory also of anthrax contracted from living animals or from the disposal of carcases. Such notifications are not unfrequently made in error to the Chief Inspector of Factories. Particulars of such cases (as well as of all cases of anthrax due to industrial conditions) are transmitted at once to the Medical Officer of Health. The practitioner notifying to, in view of the use made of his report and the very wide interpretation which (when occasion requires) can be put on "a factory or workshop," generally receives his fee. I shall adopt Prof. Delépine's suggestion in future, and also inform the County Medical Officer of Health in those cases where infection is from farm products, live animals, or carcases.

Yours very truly,

T. N. Legge.

Dr. Arthur Newsholme considered Prof. Delépine's paper of great interest and value to Medical Officers of Health. They were rather apt to lose sight of the relation of human diseases to those of animals. He had been very much struck with several points of resemblance between veterinary diseases and human infectious diseases. For instance, it had been shown that the undetected cases of anthrax were likely to cause mischief to the farmers in different parts of the country. Medical Officers of Health found in regard to typhoid and enteric fever, that it was the undetected cases that escaped inspection with which preventive measures failed. He thought it was particularly interesting to find that the same thing occurred with regard to such a mortal disease as anthrax.

Comparing the case referred to, in which a guinea-pig had been inoculated with anthrax and the disease disappeared for a time, subsequently re-appearing, they knew that with regard to typhoid fever infection might be present after eleven months. He personally knew of a case where a child was infectious over fifteen months. Another point was the possibility of infection being conveyed in the incubation period of disease. Take a diphtheritic case, for seventy-two hours the patient is a source of infection, and he thought that text-books in this respect were not altogether to be relied upon. The notification of acute cases was a very important suggestion which would, no doubt, improve matters considerably if carried into effect. He thought that in human diseases doubtful cases ought also to be notified, but that could not be discussed at the present time. In his own recollection he had only had two cases of anthrax. The first case arose in connection with carting trusses of hay on to a railway waggon in which hides had previously been carried. It took the form of a malignant pustule on the neck. The second case was brought to his notice by the Sanitary Inspector, who had his attention drawn to some blood-stained hides that had been brought into Brighton. From their tarry appearance he suspected that the animals had died from anthrax, and, having scraped off some of the blood on to a piece of glass, he brought it for examination. Having verified the nature of the disease, and ascertained the address of the farmer from whom the hides came, he was notified of the cause of death; but instead of thanks for the information, they received a complaint alleging undue interference. However, three more cows died on the farm of the same disease within a very short time of notification.

Dr. Arnold Evans, speaking as the Medical Officer of Health of Bradford, which is the centre of the wool district of the West Riding, said that he came into contact with a good deal of anthrax, both human and bovine. He considered it a most interesting disease, and the incidents of anthrax generally were so numerous that he was afraid that if he got started on the subject he should not know where to stop. He would like to ask Professor Delépine whether he considered that by a mere microscopical examination of slight cadaveric scrapings from the spleen he could determine the presence of the anthrax bacillus. For his part he could not be certain, owing to the many bacilli that resemble anthrax. It seemed to him absolutely necessary to have not only an examination, but to reproduce the disease in some other animal. He would also like Professor Delépine to give his opinion of the *bacillus anthracoides*. It had been pointed out by Dr. Legge that anthrax was less prevalent where the greater part of the industry relating to hair, wool, and hides was carried on. He himself had noticed in his own district that a large part of the refuse from the wool-combing works was used as manure, some of it in the immediate neighbourhood of Bradford, and some of it was, no doubt, sent a good distance further off. He would like to know if Professor Delépine knew whether any was sent to Scotland. When investigating an outbreak some years ago he had found that a particular field had been manured with refuse from wool which was supposed to be of a harmless description. According to the Home Office regulations wools are scheduled in two classes, dangerous and non-dangerous, and all the dangerous refuse is ordered to be burnt. He firmly believed that if this were not done anthrax would be far more common in the West Riding than at present. Another point that Professor Delépine had not referred to was the fact that animals are sometimes infected when feeding on non-infected pastures. In one case he had been unable to trace any refuse from wool-combing works, but, strangely enough, there was a wool-combing works half-a-mile up the stream which watered the pasture. It seemed to him that the animals had been infected through the water, and he would like to know from Professor Delépine if animals could contract anthrax by drinking polluted water. In reference to the carrying of anthrax from one place to another, there was no doubt that it was spread from animals to men and from men to animals by materials thrown out as refuse, but in his opinion it was also produced from finished articles. As an instance of this, he might say that a short time ago he was informed by Dr. Chalmers, of Glasgow, that a man had died there of intestinal anthrax. His work was in connection with the manufacture of linseed oil. Dr. Chalmers gave him the address in Bradford where certain materials came from, and he (the speaker) found that they were made from a mixture of wool and hair which came from China and Eastern Russia, and this appeared to be the only possible source of infection. A post-mortem on the man showed that there was no doubt whatever about the case being anthrax. With reference to the disposal of carcases dead from anthrax, the regulations of the Board of Agriculture state that no blood shall be spilt, and that the best way to get rid of a carcase is to bury it at a depth of about six feet. This he quite agreed with, and it was a method which he always adopted. Formerly his practice was to employ a knacker to quarter it and have it burned in the destructor, but it seemed to him that, although this might be perfectly safe, it was not at all free from danger to the men employed. The proof of this was to be found in the skin industry in Bermondsey, where the people dealing with the hides sometimes contracted anthrax.

MR. WILLIAM HUNTING gathered that Dr. Delépine assumed that there was an increase of anthrax, but he did not think that it had been proved. No doubt more cases were reported than formerly, but thirty years ago, for instance, cases were called splenic apoplexy; nowadays farmers knew more about it. The abattoirs in large towns at the present day had veterinary surgeons attached to them, and they discovered cases by microscopical examination, or sent their material either to London or Manchester for diagnosis. The number of cases added by the microscope during the last few years, he considered would account for the increased number of the returns. Thirty years ago every farmer in Lincolnshire had cases of splenic apoplexy, and they never paid much attention to it. Besides, the anthrax order compelling notification had not been in existence very long. As to the conclusions drawn by Professor Delépine, he evidently recognized the extreme difficulty of dealing with the matter, because he suggested that there should be notification of every serious case of illness amongst cows and bullocks to the local authorities. At present the Board of Agriculture employ the police as inspectors under the Contagious Diseases Act, and every report would be followed by the prevention of removal of animals from that particular farm, and so long as the Board of Agriculture employ policemen instead of veterinary surgeons to take the first examinations on the farm, the farmers will not notify every case. Besides, beasts die so frequently on a farm that as a rule the first thing they found was that the animal was dead. Then again the farmer suspected poisoning by his men or by patent foods. The only thing was for the veterinary surgeon to see the cows early and to diagnose the case promptly by the microscope, and that, as had already been pointed out by Dr. Arnold Evans, was not an easy matter. Professor Delépine suggested compensation, and that would, no doubt, do a great deal of good, if in the form of a notification fee worth having. It would, however, take some years to educate the farmer, and to make him believe that a carcase should not be sold for food. From his personal experience, that every carcase should be disposed of for food seemed to be in-bred in all farmers, but if they gave some compensation he thought it would assist to improve matters. There had been a suggestion as to the slaughter of animals and disposal of carcases under licence. That, he thought would be a little harsh, because there were a number of cases that were perfectly healthy, and there could not be very much harm done on a farm. For instance, an animal might break its leg, and surely there would be no objection in such a case! The inspection of every animal would also he thought be a little hard, although it would be beneficial to many of their veterinary surgeons. There was another way in which a great deal of good could be done. There ought to be more attention given to the importation of infected material, for when one considered the immense quantity of material infected with anthrax brought into this country, it could not be destroyed without causing harm. There were certain ports that were well known for sending hardly anything else but diseased wool, hair, and hides into this country, and horses were infected with oats carried on board ship. Something might be done by prohibiting the importation of material from such ports as were known. Further, Professor MacFadyean and others had recently published examinations of cake in which they had found the anthrax bacillus. He thought that these positive discoveries of anthrax in cake ought to be taken into account in many negative cases, and that the importation of foreign made cake should have some limitation put upon it.

Dr. Frank Robinson mentioned some experiments of which he had knowledge, conducted by Professor Boyce in the Liverpool Municipal Laboratory during the early part of 1904. Food stuffs were examined bacteriologically which were obtained from the same sources as those supplied to cattle, the carcases of which were detected in the abattoirs by the city Inspectors and proved to be infected with anthrax. Oil cake and various grains were among the food materials examined, and, as far as the speaker's observation extended, in no case was the anthrax bacillus found. The results were thus similar to those of Professor Delépine in connection with oil cake.

Professor Stockman (Board of Agriculture) was of opinion that Prof. Delépine must admit that very reasonable grounds existed for believing that anthrax was not only imported but spread in this country by means of manure and cake. Before they could dogmatize they would require a good deal more information than they had at present, and they must keep an open mind. Referring to the statement made in paragraph 2 of Prof. Delépine's paper as to the careless disposal of carcases having possibly caused the infection of pastures, he would like to know if the cases were actually followed out and investigated. Dr. Delépine said that from the statistics published by the Board of Agriculture the disease was very unequally distributed in Great Britain, some counties being almost free from the disease, while others were severely affected, and that these facts pointed to persistent local sources of infection rather than to occasional importation by articles in common use. He did not think it did in every case; in one county it might be explained in one way, and in another in a different fashion. He was not advocating any particular doctrine, but in support of the cake theory, if they looked at the statistics they would find that Edinburgh, Haddington, Elgin, Aberdeen, and Nairn were the most severely affected countries. That was quite true, but there was another industry which might be considered a possible source of infection, and that was the cattle-feeding industry, and in those counties a great deal of the feeding of store cattle goes on. That might account for the great number of cases one could find in those districts. If one examined the reports one would find that animals had been on the place for some time, and that cake had been used quite recently; therefore he began to think that there was a very great deal in the introduction by cake and manure, especially from foreign countries. Prof. Delépine refers to having examined eight samples of cake without result. He was aware that Prof. Delépine did not attach too much weight to these eight samples, but to prove the negative in this case was, he thought, a hopeless matter. One man might examine a hundred parts of the same cake experimentally and get no results, while another man might get positive results in one or two parts. They must examine millions before they could say that they were convinced that cake had little or nothing to do with anthrax. He did not therefore quite agree with Prof. Delépine. With regard to cases they met with in slaughter-houses, they very often occurred in ailing cattle that were sent in from farms in the neighbourhood of the slaughter-houses. The farmers would rather send them to be slaughtered than have any trouble with them. That might account for a good many of the slaughter-house cases, but it rather inclined him to think that those cases were not such a dangerous source of infection as one might think, because there the carcases were very well looked after. Another point worth noticing was that relating to the thoughtless or illicit disposal of carcases. Theoretically Prof. Delépine was quite correct, but within the last three years far more attention had been paid to the diagnosis and reporting of anthrax, and it was within that period that the marked increase had taken place. He agreed with Mr. Hunting that a large part of the increase might be due to the reporting; people became frightened and reported cases that might not be anthrax.

The President (Dr. J. F. J. Sykes) thought that if he interpreted the paper aright, Dr. Delépine had brought the question before the Society principally on the ground of the communication of the disease from animals to human beings, and the probable greater increase of that communication due to unknown causes. He believed that was the purport of his remarks apart from his own bacteriological inquiries, and then he came to suggest certain remedies such as notification. Curiously enough Prof. Stockman and Mr. Hunting pointed out to them that the increase of the disease was due to better diagnosis. If that were so, then it meant notification. Mr. Hunting suggested that if a notification fee were paid it would be better still. It seemed to him that the remedy was to be found rather in the direction of death certificates, and that it would be better to get to know the disease rather than to adopt severe measures and frighten people. He himself thought that the increase in the number of cancer cases was also probably due to the diagnosis being better. He had not the least doubt, however, that notwithstanding all that had been said in favour of a notification fee, better diagnosis and so on, there would remain over a considerable number of missed cases. Hospital isolation had so reduced the virulence of scarlet fever that it had become a mild disease, and it was this mildness that increased the disease. Dr. Newsholme had said that he would like to see doubtful cases notified. The law did not prohibit the notification of doubtful cases. He frequently heard a medical man say that he thought a case was diphtheria, and he always replied that if he would give a certificate he would accept it. That was quite sufficient, and he had many such cases, so there was nothing to prevent notification. He had been rather amused with what Mr. Hunting had said as to the farmer's idea that all animals that died or were killed should be eaten.

Professor Delépine replying said that some of the remarks made by Dr. Legge, in the letter read at the meeting by Dr. Jones, were obviously based on the belief that the paper referred to anthrax as a whole. It, however, dealt only with some points in the *etiology of agricultural anthrax.* In saying that little had been done in the last few years, Professor Delépine was referring to the etiology of agricultural anthrax, and he had not overlooked Dr. Legge's important work on industrial anthrax, which is referred to in the communication which he had just read. With regard to the *influence of season*, Dr. Legge did not very clearly point out in what way the seasonal variations of the disease in Russia and Asiatic countries affected the question of the increase in the number of cases reported in Great Britain during the last few years. Professor Delépine, like others, had been struck by the fact that anthrax in Great Britain is often more prevalent in winter than in summer, and this led him some years ago to suspect that infection of the soil might not have the same influence in England as it had in warmer countries. Consequently it seemed natural to infer that infected food imported from countries where anthrax was prevalent during the warm months, was one of the chief causes of anthrax in England. Professor Delépine supposed that this was what Dr. Legge wished to bring forward. A study of the distribution of agricultural anthrax in Great Britain does not give any ground for believing that this theory is sufficient to explain the origin of more than a few sporadic cases. On the other hand, the recurrence of the disease from year to year in limited localities indicates the existence of distinct infected areas.

Professor Delépine at the very beginning of his own enquiry had determined the *incidence of anthrax in a county, month by month,* for twelve years, and contrary to what Dr. Legge would expect, he had obtained practically no useful indications from this study. He thought that the difference between Russia and England in this respect was probably due to the fact that in *continental climates* the differences between the hot and cold seasons are very much more marked than under an *insular climate* like that of England, where the temperature is more uniform.

Mr. Hunting and Professor Stockman seemed to believe that the alleged recent increase in anthrax was more apparent than real; they attributed it to better knowledge of the disease and *improved notification.* Professor Delépine pointed out that if that interpretation was to be trusted, the knowledge of agricultural anthrax must have been greater in 1893 than at present, since in that year the number of reported cases was the greatest on record. Then in Cheshire, where the marked increase between the years 1900 and 1903 first attracted the author's attention, there had been no change of administration and no change of responsible officials for many years. These officials knew anthrax well, and had detected cases of anthrax from time to time during a period of over ten years, and the diagnosis had in many cases been confirmed by full bacteriological investigation in the Public Health Laboratory. The Board of Agriculture did not express any such doubts in its reports, and simply stated that *the continued increase of anthrax was difficult to explain.* As to the possible influence which recent circulars of the Board of Agriculture might have had on notification, the speaker thought that this might be discounted, and wished to point out to Professor Stockman that *the circulars appeared to have been issued on account of the increase,* which had certainly been noticed previous to their issue.

With regard to the *relative value of positive and negative results* in the bacteriological examination of imported foods, Professor Delépine was not prepared to agree entirely with Professor Stockman. The examinations which he had made in the Public Health Laboratory were all of cakes and other imported foods to which definite outbreaks of anthrax had been attributed. Moreover in each case a large quantity of material had been tested by cultivation, inoculation, and feeding experiments. Negative results obtained in this way, though not so convincing as positive results would have been, had nevertheless a special value, because in each case the food was from actual stock used for feeding the animals which had contracted the disease. Even had positive results been obtained, it would have been necessary to exclude the possibility of the contamination of the food after it had been lodged at the farm. In order to exclude this possibility it is always necessary to examine separately the superficial and the deep parts of a cake. This has not always been done, and *some of the positive results recorded were at least open to doubts* similar to those attaching to negative results.

ANTHRAX IN 1905.—During the first quarter of the present year there were in Great Britain 278 outbreaks of anthrax. Comparison with the corresponding quarter of the three preceding years shows that anthrax is becoming increasingly prevalent. In 1902 there were 202 outbreaks in the first quarter, followed by 204 in 1903, and 270 in 1904, and now by 278. The number of animals attacked during the same periods were 357 in 1902, 323 in 1903, 370 in 1904, and 421 in 1905.

THE DISPOSAL OF ANTHRAX-INFECTED CARCASES.—It is required under the Order of the Board of Agriculture that where the bodies of animals dead from anthrax are buried, there shall be one foot of lime below and one foot above each carcase, but in many instances only 3 cwt. of lime is used. It has been suggested by one of the Board's Inspectors that a cheaper and more satisfactory plan where a destructor is not available, is to destroy them in a cremating pit similar to that adopted by the Hindoos in India. The total cost for destroying the body of an animal would be about £1 or £1 5s.

A NOVEL SYSTEM OF VENTILATION.—J. M. Adam & Company, pneumatic engineers, of Glasgow, send the *Times* the following facts in relation to the new shops of the Singer Manufacturing Company, Kilbowie, Clydebank, whose additional factories for the production of 20,000 sewing machines per week are now approaching completion. They are about to instal in their wood-working department an elaborate and novel system of combined ventilation and shop cleaning, designed by the above-mentioned firm. There are eight cabinet-making workshops 200ft. by 80ft., containing specialized machine tools, and immediately from each tool the sawdust and chips are drawn as produced and conveyed by air current to the main boilers, into the furnaces of which they are fed continuously and automatically for steam raising. The fans are motor driven and consist of nine equal units in three groups of three, concentrated in three main pressure ducts carried on a bridge of five spans, each of 50ft. and about 30ft. high, supported on steel lattice columns across the yard between the factory and the boiler house. The bridge will also carry an elevated rope traction tramway with a service of small trucks conveying to the same destination broken wood and other refuse too heavy for air current transmission. The power absorbed will be close on 150 b.h.p.

THE ACTION OF THE MERTHYR DISTRICT COUNCIL UNDER THE "HOUSING OF THE WORKING CLASSES ACTS." *

By D. J. THOMAS, M.R.C.S., D.P.H.,
Medical Officer of Health for Merthyr Tydfil.

I FEEL that I owe you an apology for bringing to your notice such a hackneyed subject, and am well aware that I have nothing new to say on it; but to me, though old, it is ever recurring. I shall be brief, and shall practically only refer to those points of the question which are debatable, and I hope to profit from the suggestions which the members of the Society may make.

Unfortunately for me, in our district, the housing question assumes almost all its manifold phases.

First and foremost we have the question of insanitary areas and unhealthy houses. A large portion of the town was built before the passage of the Public Health Act of 1848; the population at the census of 1851 was 46,692. Before the establishment of the Local Board of Health in 1850, absolutely no control was exercised over sanitary matters, as the district had no private Act of Parliament. Builders were allowed to erect houses according to their whim and fancy, with the result that courts were numerous, and many areas congested with buildings. Houses were built back-to-back, over-and-under, and against the earth. These are the conditions which now render the houses unhealthy. In addition, some of the houses are old, and simply show the symptoms of decay.

This was the first phase presented by the housing question in our district, but this difficulty of dealing with insanitary areas was enhanced, or at any rate perpetuated, on account of a scarcity of houses. The supply of new houses did not keep pace with the demand, or more correctly, did not exceed the demand to such an extent as to justify the closure of insanitary houses to any considerable extent. We had to choose between two evils, insanitary houses or overcrowding. If we dealt with the former we should inevitably increase the latter.

As private enterprise did not seem able to meet the demand, the Council decided to build 100 houses under Part iii. of the Housing of the Working Classes Act of 1890. Whatever may have been the cause, the period at which the Council decided to put its powers into force

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* Read at the February Meeting of the West of England and South Wales Branch at Newport, February 28, 1905.

marked also an increase in the number of houses erected by private enterprise, as these figures will show. In 1901, 240 new houses were built; in 1902, 225; in 1903, 424; and in 1904, 586.

This increase in the number of new houses has resulted in a diminution of overcrowding. I am not going to trouble you with figures, but compared with 1903 there was less overcrowding in every class of house in 1904. If we accept the standard that a house is overcrowded when the number of inmates exceeds double the number of rooms, there was not only a diminution in the percentage of overcrowded, but also in the number of houses sublet.

These latter conditions justified the Council to deal more liberally with insanitary dwellings, and last year (1904) 63 were closed under Part ii. of the Act of 1890.

But another difficulty now confronts us. Besides insanitary dwellings and a scarcity of houses, a third factor enters and complicates matters still further, and that is the question of poverty. Owing to the increased cost of materials, wages, etc., 5-roomed houses cannot be erected so as to let under 5s. to 5s. 6d. a week, but a large proportion of our general labourers in Merthyr earn less than 20s. a week, and cannot afford more than 3s. to 4s. a week rent. The following particulars as to the 100 houses built by my Council will show you this difficulty.

On March 21, 1900, the Council passed a resolution to put Part iii. of the Housing of the Working Classes Act, 1890, into force, and erect 100 workmen's cottages. An inquiry was held by the Local Government Board on December 5, 1900, and sanction was given to borrow money for the purpose. Land was secured at Gellyfælog, a lease being granted for a term of 999 years at an annual rent of three-halfpence per square yard. The roads were made in 1901, and the contract for the erection of the houses was signed in February, 1902.

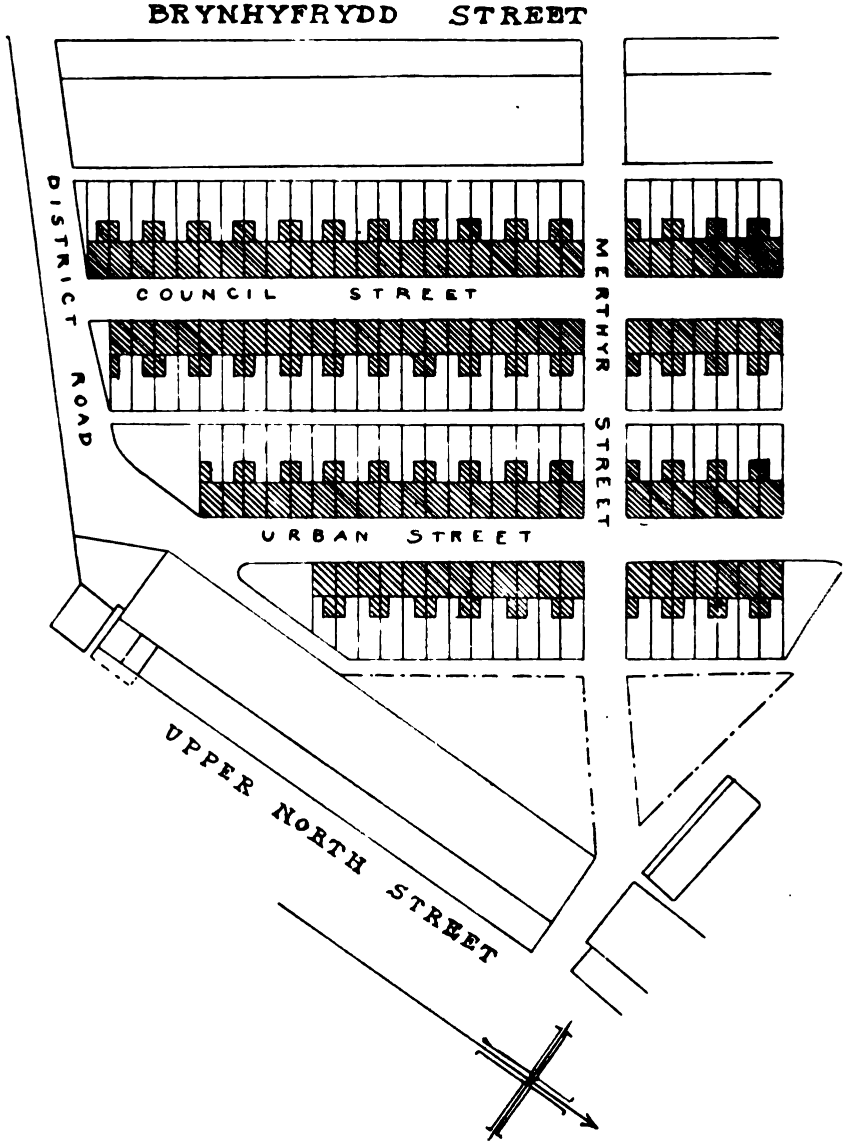
The first batch of 25 houses was occupied in April, 1903, 58 more were completed at intervals during 1903, and the last house was occupied in February, 1904.

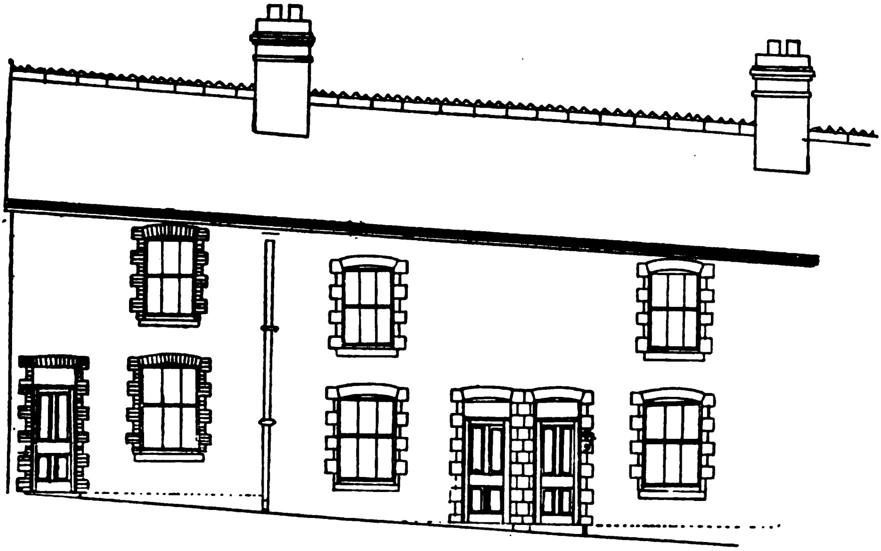
The cottages are self-contained and provided with a garden. The area at the rear belonging exclusively to each house measures 545 square feet.

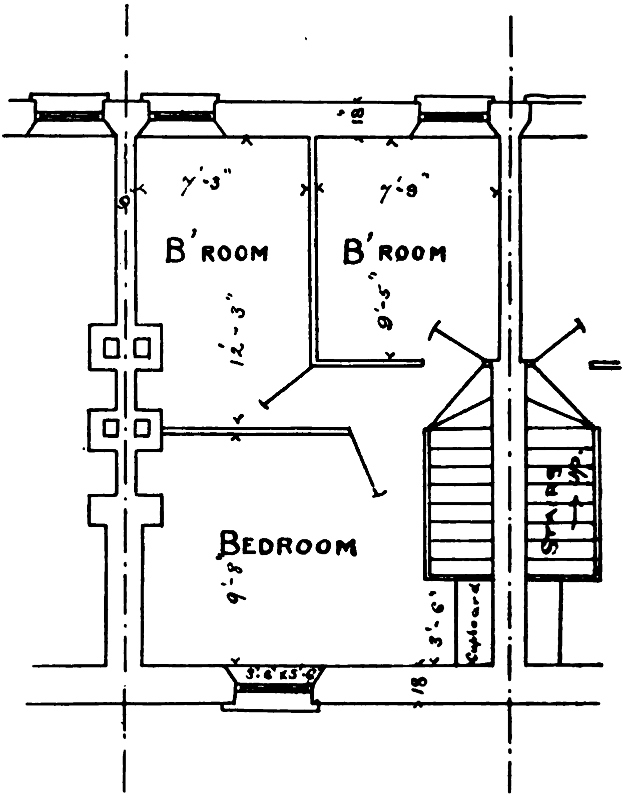
They are built in eight blocks and arranged on both sides of two streets —Council Street and Urban Street. The streets are 30 feet wide, but a lane at the rear measuring 10 feet in width forms a secondary means of access to each house.

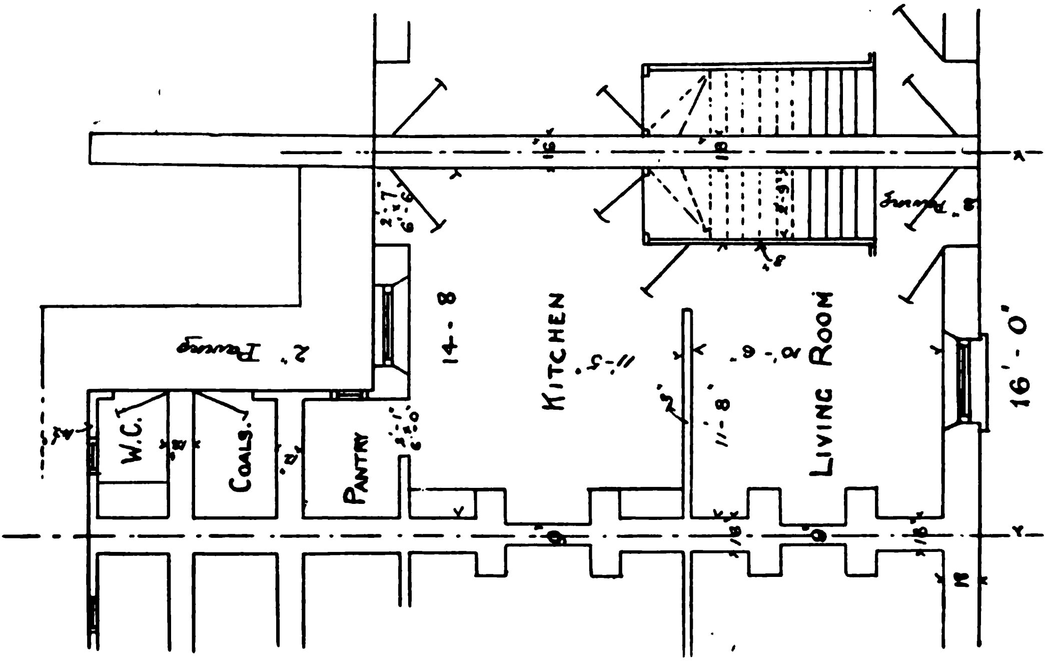
Each house consists of 5 rooms, together with a pantry, coal-house, and water closet. The ground floor consists of the two living rooms and pantry, and on the first floor are 3 bedrooms. The following are the sums actually expended :—

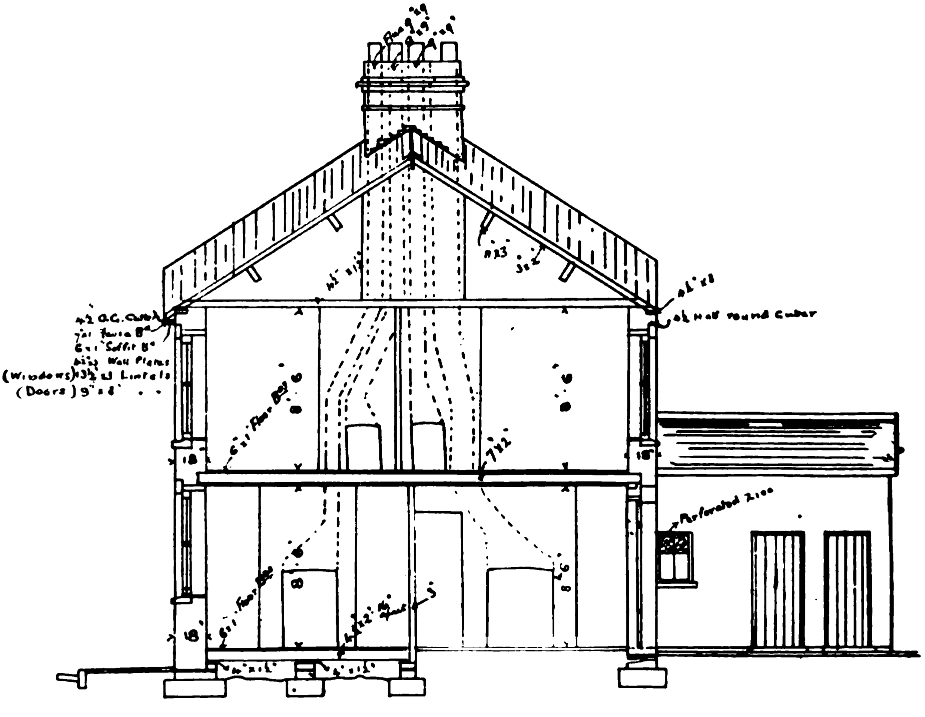
	£	s.	d.
Contract for houses	£15,950	0	0
" " roads	416	12	3
Loan and law charges	71	18	0
Printing and advertising	15	19	6
Stone Royalty and ground landlord's surveyor .	250	0	0
Gas fittings	100	0	0
Clerk of works	245	5	0
	£17,049	14	9
Less amount received for copy of specification ..	3	3	0
	£17,046	11	9






18
7'-3"
7'-9"
9
B'ROOM
B'ROOM
12'-3"
9'-5"
BEDROOM
9'-8"
Stairs up
3'-6"
Cupboard
3'.6" x 5'-0"
18


W.C.
COALS.
PANTRY
KITCHEN
LIVING ROOM
2' Passage
14-8
11-5
11-8
10-9
16'-0"
X
Y
9
18
Larder 8


4½ O.G. Gutter
7x1 Facia 8"
6x1 Soffit 8"
4½x3 Wall Plates
(Windows) 13½x3 Lintels
(Doors) 9"x3
4½ Half round Gutter
Perforated Zinc
8-6
8-6
8-6
18
18
18

Various items such as architect's fees are not included. In estimating the cost, possibly these items should be included, but as the work was done by the Surveyor to the Council, a specific sum was not set apart for the purpose. The figures work out at £170 7s. 4d. per house, or £34 1s. 6d. per room. The original loan was for £15,000, and its repayment covered a period of 30 years, the rate of interest being 3¾ per cent per annum. The remaining sum (£2,046) was borrowed at 4 per cent, the period of repayment being extended to 60 years. The houses are let at an inclusive rental of 22s. 6d. a month. It is evident that these dwellings are beyond the reach of the poorer portion of the community, but in view of the restrictions placed upon sanitary authorities, it is difficult to see in what direction economy is to be practised in the erection of similar buildings. But if the scheme has not attained its object, it has helped to relieve the pressure for house accommodation which existed, and thus enabled the Council to deal more freely with insanitary property. The policy of the Council hitherto has been against subsidizing one portion of the community at the expense of the others, and very few municipalities have been able to build new houses so as to place them within the reach of the poor. Which is the better plan to adopt, to build new houses and allow them to be sublet, or to acquire some of the more satisfactory of the older and insanitary properties, and by extensive repairs make them reasonably fit for human habitation? Some houses of course are beyond hope of redemption, and must be closed, but there are others the shell of which is in fair condition, but the interior has become dilapidated. It must at once be admitted that by these means a standard of efficiency is accepted, which is much lower than what is demanded in new buildings. There is one other question which is intimately connected with housing in this district. The number of single men who find employment at the ironworks and collieries is considerable, and the conditions under which they have to conduct their ablutions, etc., are not always conducive to comfort. In houses of five or more rooms the difficulty is not experienced, as the female occupiers of the house are able to carry on their work in a separate room; but unfortunately, as the following lists will show, a large number are kept in two and three roomed houses.

Number of houses where lodgers were kept or apartments let in 1903 and 1904:—

			1903.				1904.	
2 roomed houses	54	or	11	per cent	17	or	7·6	per cent of houses inspected
3 ,, ,,	119	,,	23	,,	35	,,	14	,, ,, ,,
4 ,, ,,	586	,,	30	,,	300	,,	20	,, ,, ,,
5 ,, ,,	410	,,	37	,,	337	,,	38	,, ,, ,,
More than 5 rooms	307	,,	39	,,	305	,,	38	,, ,, ,,

There are in the district 16 registered common lodging-houses with accommodation for 475 lodgers. These are periodically visited, and with one or two exceptions they are kept in a very satisfactory condition, but not one of them is such that will attract the class of persons now under consideration, nor would persons who are in regular employment associate with vagrants and others who work but for a short interval in the district and then leave. The question of providing a model lodging-house has been broached on several occasions, and as far as the single men are concerned it would undoubtedly prove a boon. But it should be recognized that many people consider it inadvisable to make their condition too comfortable, as after all the stability of the nation is dependent upon the family life. Moreover, the percentage of houses with less than five rooms each, which are sublet, has considerably diminished.

DISCUSSION.

Dr. Herbert Jones thought the question of building houses to let at 3s. 6d. to 4s. a week was a very difficult one. Working men obtained higher wages than they used to, consequently the cost of building is higher. Higher wages imply higher rents. For the labourer a house ought to be built for less than £170. At Hereford the City Cottages are let at 3s. 6d. to 4s. per week, and they pay at that price. Workmen's cottages should have three bedrooms, but an extra living room is not always a necessity; it is often a show room only. A larger kitchen and scullery would answer the purpose. In respect to the "lodger" question, he thought Rowton Houses should be provided for single men in colliery districts; but colliery managers opposed the erection of them.

Dr. J. W. Jenkins endorsed Dr. Herbert Jones' remarks, especially in respect to lodgers. It is a crying question in the Rhondda. From a sanitarian point of view, and apart from Dr. Sykes' theory, Rowton Houses were advisable. Bathrooms should be provided in colliery districts. Gardens should also be provided in connection with workmen's cottages.

Dr. Walford stated that they had no insanitary areas which can be legally dealt with. There was no house famine, for they had at present 1,000 empty houses. His practice has been to deal with insanitary houses under Part ii. of the Act. Nearly all the courts had been removed in this way. Where areas have been removed, houses have been built and occupied, but not by those who were displaced. He agreed with Dr. Thomas that a good way of proceeding is to repair existing dwellings. This has been done largely at Glasgow, and has answered the purpose well. With respect to dilapidated houses, formerly notices had to be served *re* nuisances before taking the case into court, when one felt that the nuisance could not be remedied other than by pulling down the premises.

Dr. Bond stated that he had no special experience, as he had to deal with small towns. Remedies had to be adapted to the circumstances of each district. In model lodging-houses common bath-rooms meant economy. He thought some cottages should be built with two bedrooms, for people with young or small families. In his opinion the cost of erection (£170) at Merthyr was excessive.

Dr. Howard Jones' experience at Newport was very similar to that of Dr. Walford at Cardiff. There were no slums. The speculative builder supplied the demands of an increasing population, but there was a deficiency in the number of cheap houses. Every effort was made to get old dilapidated houses into a sanitary condition, as they were cheaper than the new houses.

Dr. Symons stated that they lost £9,000 at Bath over their scheme under Part i. of the Act. One such experience made a Corporation very shy in reference to future action. The houses they built rented at 5s. per week. The old inhabitants have gone to other courts and alleys, and their habits are unchanged.

Dr. E. Davies, in referring to the practice at Swansea, stated that they insisted upon repairs, as far as possible, in preference to closing.

Dr. Thomas replied. In reference to Dr. Walford's query *re* "method of proceeding," at Merthyr they issued two notices, the first *re* nuisances, and the second stating that nothing could be done short of demolition. In the case of back-to-back houses, three-roomed houses were converted into six-roomed houses, with the result that these were sublet.

The Return to the Country.—The *Times* in its engineering supplement (April 5th) makes the following pertinent remarks on the recent transference of an important engineering and iron-working establishment from London to the provinces. The advantages presented by a rural situation for large manufacturing works are numerous and important. There is, first, a decided relief from the burden of metropolitan rates. The workpeople live in a healthier atmosphere, find the necessaries of life cheaper, and are under more effective control, being freed in a large degree from trade-union influences. Lastly, it is found that a much superior *esprit de corps* is attained by country localization, the quality and quantity of work accomplished being greater than in urban or semi-urban localities.

Shabby Treatment of a Medical Officer of Health.—The necessity for giving security of tenure to Medical Officers of Health has been once more illustrated in the treatment which has been experienced by Dr. Francis T. Bond at the hands of the Chipping Sodbury Rural District Council. Dr. Bond has been Medical Officer of Health of the district for thirty-two years at an annual salary of £115. In October, 1904, the Barton Regis district was broken up, most of it being added to the city of Bristol, and three parishes with a population of 4,600 being added to the Chipping Sodbury Rural District. The Medical Officer of Health of Barton Regis having recently died, the Chipping Sodbury Council asked Dr. Bond to undertake the supervision of the added parishes, but without any extra remuneration. This Dr. Bond very properly refused to do, and after an appeal to the Local Government Board he was given an increased salary of £33 per annum. His term of office will expire in May, and instead of reappointing him the Council has advertised for an officer at a salary of £120 yearly. The Local Government Board has mildly protested, and in doing so has pointed out that the fact of Dr. Bond residing away from the district is no disadvantage, and that it is a distinct advantage to be able to secure an officer with special qualifications for the post. It appears to be thought that the salary paid by the Council is above the average of those paid in other rural districts. This, however, is not so, but rather the reverse.—*Lancet*, April 15th, 1905.

ANTHRAX IN LANARKSHIRE.

The Lanark County Council have issued a report of their Medical Officer, Dr. J. T. Wilson, on anthrax, and the reports of veterinary inspections are appended to it.

Lanarkshire is one of the counties in which the outbreaks of anthrax are least frequent, and in which the disorder does not appear to have affected sheep. One of the veterinary inspectors is of opinion that foreign foodstuffs are responsible for the disease, but the occurrence of anthrax on farms where no such food is used is sufficient proof that they are not the sole source of infection. Dr. Wilson has been unable, indeed, to confirm the observations of those who find the organism in specimens of imported food, even that used by animals actually affected.

In his opinion the following points seem to be established:—

1. That a buried carcase is innocuous. The organisms rapidly degenerate, and by the fifth day are unrecognizable; only under most exceptional circumstances does sporulation occur. Cremation is therefore unnecessary.

2. The discharges from an animal sick of the disease, and the shed blood, can and do infect the surroundings and spread the disease to other animals grazing in the same meadow, or feeding from the same stall.

3. The recognition of non-fatal cases of anthrax in cattle is difficult; indeed a diagnosis is seldom if ever made in the absence of post-mortem evidence from a fatal case.

4. The flesh of an animal dead of anthrax may, as a rule, be consumed with impunity. The case investigated and reported by Dr. Chalmers to the Glasgow Corporation, however, shows that such meat is not above suspicion.

5. Vaccination, where it has been carried out in Lanark, has so far met with no failure.

6. Examination of the blood of suspected cases *intra vitam* failed to reveal the bacillus, even where the animal ultimately died of anthrax.

Dr. Wilson takes exception to the suggestion made that anthrax should be brought under the single control of the Board of Agriculture, but he considers that body should undertake some original research and inquiry bearing upon the cause and prevention of anthrax throughout Great Britain and Ireland.

SANATORIA FOR LONDON CONSUMPTIVES.

An important Deputation, organized by the Metropolitan Branch of the Incorporated Society of Medical Officers of Health, waited upon the Managers of the Asylums Board on Saturday, 15th April, to urge the present need for the provision of sanatoria for Metropolitan consumptives, and to suggest that, for such a purpose, the Metropolitan Asylums Board is eminently qualified, by virtue of their previous experience in dealing with other infectious diseases, to become the Sanatorium Authority for the Metropolis.

The Deputation consisted of: Drs. Roberts, T. O. Dudfield, Sykes, Allan and Priestley (representing the Metropolitan Branch); Sir Wm.

Broadbent, Bart. and Mr. Malcolm Morris (representing the National Association for the Prevention of Consumption and other forms of Tuberculosis); Drs. Roberts and Millson (representing the Royal Institute of Public Health); Prof. Kenwood and Mr. Whitaker, F.R.S. (representing the Royal Sanitary Institute); Dr. Squire, C.B. (representing the National Health Society); Sir Edmund Hay Currie (Hon. Secretary to the Metropolitan Hospital Sunday Fund); Mr. W. H. Bunn (representing the Metropolitan Hospital Saturday Fund).

The Board was addressed, on behalf of the Deputation, by Dr. T. O. Dudfield, Sir Wm. Broadbent, Bart., Sir Edmund Hay Currie, and Mr. W. H. Bunn, who placed before the Board very fully the many reasons for action being taken at once in connection with Metropolitan consumptives by the provision of sanatoria by the Metropolitan Asylums' Board.

Mr. A. C. Scovell, the chairman of the Board, in reply, said the deputation could not have addressed itself to an assemblage which was more sympathetic, and more anxious to do what in them lay to promote the public health of London. The main difficulty was that of expense, and it was satisfactory to be assured that the capital expenditure necessary would not be very excessive. But the question still remained whether the public and ratepayers of London were sufficiently educated and acquainted with the great wants of the tuberculous portion of the population to induce them to give a ready assent to the payment of increased rates for the purpose of providing sanatoria. The managers had no mandate to spend or even to suggest expenditure in fresh directions. They therefore desired to throw upon the Local Government Board the burden of inquiry, and to receive from the Board some guidance in the matter of carrying out a duty which undoubtedly the more enlightened portion of the community desired to see carried out. He promised the deputation the most earnest consideration of the facts which had been laid before the managers, and expressed the hope that the day would soon come when they would see their wishes carried out, whether it were by that Board or through some other body.

THE Somerset County Council has decided to appoint a Medical Officer of Health. The terms of the appointment are that he shall not devote the whole of his time to the duties of the office, and shall be paid a salary of £150 annually, with a fee of five guineas daily when engaged upon making special investigations on behalf of the Council, such fees not to exceed £100 in any one year.

TYPHUS FEVER AND VERMIN.—Prof. Mathew Hay in his monthly report for February refers to the typhus fever outbreak in Aberdeen (see *Public Health*, April, p. 476), and states that since the beginning of the epidemic four nurses and two ward-maids, in addition to the ambulance driver, have been attacked. Every member of the staff infected was engaged more or less in transporting and cleaning typhus patients or contacts. All the members of the staff, nursing and otherwise, not so engaged have thus far escaped, however much they have been exposed to the emanations from patients. Further experience, therefore, serves to confirm the view expressed in my previous report, that body vermin—probably fleas—play an important part in the conveyance of infection.

LAW REPORTS.

HIGH COURT OF JUSTICE.

COURT OF APPEAL.

April 7th, 1905.

BEFORE LORD ALVERSTONE, L.C.J., KENNEDY AND RIDLEY, JJ.

WOLFENDEN *v.* MCCULLOCH.

Sale of Food and Drugs Act, 1875, Section 6—Sale of Milk as taken from Cow—Deficiency in Fat.

No offence is committed under Section 6 *of the Sale of Food and Drugs Act,* 1875, *by selling milk deficient in fat, if the milk is sold as taken from the cow, unless by reason of the method of milking or the health of the cow, the article is not in fact of the nature, substance and quality demanded. Smithies v. Bridge* (1902), 2 *K. B.* 13, *distinguished.*

This was a special case stated by justices on the hearing of an information against the appellant Wolfenden for selling a pint of milk, which was not of the nature, substance and quality demanded by the respondent the purchaser, contrary to Section 6 of the Sale of Food and Drugs Act, 1875. The milk was sold from a can from which the appellant's agent was delivering milk. The public analyst's certificate was as follows :—

"We are of opinion that the said sample contained the parts as under—2·81 per cent fat, 8·94 per cent other solids, 11·75 per cent total solids, and that it is slightly deficient in cream. "Observations : No change had taken place in the constitution of the sample that would interfere with the analysis." It was therefore proved by the production of the analyst's certificate, and not disputed by the appellant, that the milk supplied contained only 2·81 per cent of fat, and, further, that the cows from which the milk had been obtained had been milked at about 4 o'clock in the morning of the same day, and that the milk so sold as above mentioned had not been tampered with or adulterated in any way, but was in the same condition exactly as it had come from the cows at that milking. It was further proved to the satisfaction of the magistrates that the cows before the 4 o'clock milking had not been milked for at least fourteen hours—that is to say, at about 2 o'clock in the afternoon of the previous day—and that the small percentage of fat above mentioned was accounted for by the fact of that long interval between the two milkings, a portion of the fat of the milk during that interval of fourteen hours becoming absorbed by the cows. It was also proved that the hours of milking adopted by the appellant, *viz.* 4 o'clock in the morning and 2 o'clock in the afternoon, were the hours usually adopted by the trade in the borough, and also in the neighbouring city of Liverpool and district. The regulations of the Board of Agriculture called the "Sale of Milk Regulations, 1901," dated August 5th, 1901, state as follows : "(1) Where a sample of milk (not being milk sold as skimmed or separated or condensed milk) contains less than 3 per cent of milk-fat, it shall be presumed for the purposes of the Sale of Food and Drugs Acts, 1875 to 1899, until the contrary is proved, that the milk is not genuine by reason of the abstraction therefrom of milk-fat or the addition thereto of water. (2) Where a sample of milk (not being milk sold as skimmed or separated or condensed milk) contains less than 8·5 per cent of milk-solids other than milk-fat, it shall be presumed for the purposes of the Sale of Food and Drugs Acts, 1875 to 1899, until the contrary is proved, that the milk is not genuine by reason of the abstraction therefrom of milk-solids other than milk-fat, or the addition thereto of water."

The justices were of opinion that there had been no adulteration of or abstraction from the milk, but they considered that they were bound by the case of "Smithies *v.* Bridge" (1902) 2 K.B. 13, and accordingly convicted and fined the appellant.

Horridge, K.C., and *F. A. Greer* appeared for the appellant, *Fleetwood Pritchard* for the respondent. The court allowed the appeal.

Lord Alverstone, L.C.J., said that the only doubt he had in the matter was whether he would be quite justified in quashing the conviction or whether the case ought to be sent back to the magistrates; but inasmuch as the magistrates had, in his opinion, decided the case on a wrong basis, nothing would be gained by sending the case back to them. He had no reason to doubt that his decision in "Smithies *v.* Bridge" (*supra*) was a correct decision, and it laid down a very different rule from that which the magistrates in the present case had imagined. It was a peculiar case, and before it reached the Divisional Court it had already been before two tribunals, *viz.* the Court of Summary Jurisdiction and the Court of Quarter Sessions, which had both decided the question of fact, and had come to the conclusion that the article in question was not of the nature, substance, and quality demanded. It raised a different question as to whether or not there could be a conviction when there had been no alteration in the milk after it had left the cow. What he had laid down in that case was, in his view, correct, namely, that where the article sold was not of the nature, substance, and quality demanded, the seller was liable under Section 6, although he might know nothing about it. That meant that it was a question of fact for the magistrates to deal with. In "Smithies *v.* Bridge" the cows had been milked under abnormal conditions. The magistrates were wrong in holding that they were bound by the above case, as there did not appear to be anything abnormal in the present case. The magistrates ought to have asked themselves whether the article produced was different in nature, substance, and quality from the article demanded. If they had asked themselves that question, their answer would have been in favour of the appellant. Under these circumstances the appeal would be allowed and the conviction quashed.

Kennedy and Ridley, JJ., concurred.

Allegations as to a Rubble Drain.—In the Sheffield County Court in the end of March last, F. M. Tindell sued W. H. Harrison, a Sanitary Inspector, for damages for false statement and mis-representation in respect to the condition of a rubble drain, which led to unsuccessful police court proceedings. Evidence was given for the defence that the drain was a nuisance by the senior inspector of nuisances and by the Medical Officer and deputy Medical Officer of Health. His Honour (Judge Mansel-Jones) in giving judgment, said it must be proved that the statement was not only untrue, but reckless. But there had not been one iota of evidence in corroboration of that. On the contrary, the defendant had proved most conclusively to his mind, and to the mind of any sensible man, that he acted in a perfectly *bona fide*, upright, straightforward manner in the performance of his duties in regard to his employers. The terms of the Act of Parliament were scrupulously carried out by him and his employers. There would be judgment for the defendant with costs.

Ferrous Sulphate in Beer.—A publican was fined at Marylebone Police Court for adding this substance to the beer which he sold. Samples taken in December, 1904, and in February of this year were found to contain it. It was urged that its addition was to make the beer frothy and palatable, but the prosecution pointed out that it exercised an astringent effect, and the dry mouth and throat resulting would increase the desire of the consumer to drink.

Industrial Anthrax regarded as an Accident.—The House of Lords on April 15th delivered judgment in the case of Brintons Limited v. Turvey, giving compensation under the Workmen's Compensation Act, 1897, to the widow and children of a man who contracted anthrax while engaged as a wool sorter in the appellant's factory, holding that this was injury caused by an accident arising out of and in the course of his employment.

PARLIAMENTARY NOTES.

Dr. Hutchinson (Sussex, Rye), presented to Parliament a Bill to amend the law relating to the qualification and tenure of office of Medical Officers of Health and Inspectors, and for other purposes. It was read a first time on April 7th.

Medical Officers of Health and Private Practice.—Mr. Weir asked the Lord Advocate if he would state the names of the six counties in Scotland where the Medical Officers of Health engaged in general or consultative practice, and arrangements would be made for such officers to give their whole time to the duties of their office when fresh appointments were made. The Lord Advocate replied that the names are Bute, Forfar, Haddington, Orkney, Zetland, Ross and Cromarty. Since 1901 it has been a necessary condition of participation in the Sanitary Officers' Grant that a county Medical Officer should not engage in general private practice.

The Adulteration of Butter.—Mr. Brigg asked the President of the Board of Agriculture what foreign nations had inspectors in this country to detect adulteration of their butter, and how many inspectors were there belonging to each nation. Mr. Ailwyn Fellowes said: "So far as I am aware no foreign nations have inspectors in this country to detect adulteration of their butter. Several countries, including Denmark, Norway, Sweden, Hungary, Germany, and the United States, have appointed agricultural representatives here, but their duty is rather to find fresh markets for their country's produce and to supply information as to the state of trade, than to detect adulteration."

The Sanitary Condition of St. Asaph.—Dr. Lloyd Roberts in his annual report for 1904 states that the sanitary condition of this cathedral city continues deplorable. Old and insanitary houses are still occupied; privies with their pits and ash-heaps drain into the sub-soil and pollute the water therein. The sub-soil water continues largely used as a supply to many of the working class houses, and vast heaps of ashes and refuse lie about in the neighbourhood of dwellings and of wells.

REVIEWS.

MENTAL DEFECTIVES: THEIR HISTORY, TREATMENT, AND TRAINING. By Martin W. Barr, M.D., Chief Physician Pennsylvania Training School for Feeble-minded Children, Elwyn, Pennsylvania. Pp. 368. Price 17s. 6d. net. London: Rebman, Limited. 1904.

Dr. Barr writes from an experience of twenty years' duration, and his views are therefore worthy of attention. The work has a certain interest for hygienists as well as for medical men generally in that it deals with the causes of mental defects, and to a large extent the conditions producing physical defects are intimately connected. A total of 5,430 cases are enquired into, with the result that Dr. Barr concludes that ante-natal causes immensely preponderate; of these tuberculosis, insanity, intemperance, and abnormal conditions of the mother during gestation occupy the chief place.

Naturally, a considerable portion of the book is devoted to diagnosis and treatment. Speaking of trainable defectives, Dr. Barr says that the consensus of opinion is that training at an earlier period than the seventh year is likely to prove disastrous. He considers that the limit of receptivity rarely extends beyond the sixteenth year. The importance of special school training for the backward, on the borderland of deterioration, is emphasized. It is stated that defective vision is noticeable in 90 per cent of the high and middle grades of imbeciles. A table is given, showing the ages at death in 625 cases; the greatest mortality occurs in the 10–25 years' period.

AIDS TO THE STUDY OF SANITARY LAW. By Harry Critchley, M.A. M.D., D.P.H. Fcap. 8vo, pp. 82. 2s. 6d. London: Baillière, Tindall & Cox. 1904.

We fear that students of this, the driest and most uninteresting part of D.P.H. work, will not derive much assistance from this little work. It leaves out too many important Acts.

PREMATURE BURIAL AND HOW IT MAY BE PREVENTED. By Wm. Tebb and Col. E. P. Vollum, M.D., late U.S. Army. 2nd edition, pp. 454. Price 6s. London: Swan, Sonnenschein & Co., Ltd. 1905.

This volume is a second edition by Dr. Walter R. Hadwen. It is largely a compilation from many sources of a large number of instances of alleged escape from premature burial and of resuscitation after interment. Though many are newspaper reports, often foreign in origin, with no evidence of verification, still a considerable number narrated by medical men and official witnesses, and also by the "corpses" themselves, leave no room for doubt as to the possibility of premature burial. Conditions simulating death are dealt with, and its signs are considered in detail, much stress being laid upon decomposition as the only reliable indication. The lax conditions of death certification in this country are discussed, and official regulations with regard to death certificates, the appointment of official death-verifiers, and the provision of waiting mortuaries in various Continental States, are quoted. Instances of re-animation in such institutions are given, and an apparatus invented by a Russian, Count Karnicé-Karnicki, is described and illustrated, the principle of which is that after its attachment to a coffin any movement is signalled to those in watching. The chief reforms advocated are compulsory examination of every supposed corpse by a medical man before death is certified by him, and the provision of waiting mortuaries at the public expense in which all bodies should be detained under constant supervision until the fact of death is established by putrefactive signs.

BIRTHS, DEATHS, AND MARRIAGES.—The sixty-sixth annual report of the Registrar-General of births, deaths, and marriages in England and Wales for 1903 has been issued as a Blue-book [Cd. 2197]. The marriages during the year numbered 261,103, corresponding to a rate of 15·6 persons married per 1,000 of the population of all ages. This was the lowest rate recorded since the year 1895. During the year the births of 948,271 infants were registered. In proportion to the total population of both sexes and all ages, these births were equal to a rate of 28·4 per 1,000. The birth-rate in 1903, calculated in this way, was 0·1 below that in 1902, and was 1·0 per 1,000 below the average in the ten years 1893–1902. The deaths registered in England and Wales during the year numbered 514,628, and were in the proportion of 15·4 per 1,000 persons living. This was the lowest rate attained hitherto, the next lowest being 16·2, the rate recorded in 1902. Since the year 1844 it has been customary to publish in the reports a series of tables giving the numbers of marriages, births, and deaths registered in the United Kingdom and in the principal European countries. With a view to the extension of the scope and utility of these tables the presidents of the Continental Statistical Bureaux were asked to add to the information concerning general mortality which they had afforded in previous years by furnishing particulars of infantile mortality, and of mortality from the principal epidemic diseases, from pulmonary tuberculosis, and from cancer. Further, the Registrars-General of those British colonies in which records of vital statistics had been kept were asked, for the first time, to contribute similar information. From the data thus obtained tables have been constructed. It is probable that in process of time the list of countries able to furnish trustworthy statistics will be extended, thereby increasing the value, for comparative purposes, of these international records. There is a further improvement in the percentage of uncertified deaths.

DRAUGHT PREVENTION IN CHURCHES AND LOFTY HALLS.—Professor Rietschel discusses in the *Gesundheits-Ingenieur* certain proposals which had previously been made with respect to the best available methods for preventing the inrush of cold air currents at the open doors of churches and public buildings. The suggested remedy was to carry up a current of heated air, by means of a shaft discharging at the ceiling level, in order to depress the "neutral zone" to a level below the church floor, but it is pointed out that this plan is based upon an erroneous assumption, and it would only be effective if it were possible to contrive that the walls and various windows and other openings were absolutely air-tight. By the neutral zone above spoken of is meant the position of equilibrium between the outside (cooler) air and the (heated) air within. In case of any air-movement to be brought about by heat, it is essential that the hot chamber should be situated below, and not above, the neutral zone. In the opinion of the professor it is of the utmost importance, in order to avoid draughts at the entrances of heated churches, to make the walls, ceilings, and windows as far as possible air-tight, so as to diminish the effects of natural ventilation.

CORRESPONDENCE.

SCARLET FEVER AT SHEFFIELD.

To the Editor of "Public Health."

Sir,

I have read with interest on page 472 of your issue for April Dr. Waddy's comments on a recent paper of mine quoting his figures.

He agrees with my deduction from his figures and says "That is quite true," *viz.* that according to them "it pays the Sheffield householder if a case of Scarlet Fever occurs in his house to keep the case at home, as thereby, *ipso facto*, secondary cases are less likely to occur." (Secondary cases it is explained of course do not include "return" cases, but are cases following the primary case at a short interval.)

I ventured to state and do again that there is obviously a fallacy somewhere in the figures, and that thorough, accurate, and carefully given as Dr. Waddy's figures are (as far as they go) it is impossible, though he has tried well, to obtain sufficient data for the necessary corrective tables.

I hope I do not "beg the question" whatever Dr. Waddy means by that. My paper was not produced for "strategic purposes," and Dr. Waddy may "with satisfaction tear to shreds" my paper, but I shall never be convinced that any figures are correct which show, as he admits himself his do, that a child exposed to infection from a primary case of scarlet fever being kept in the house is less likely to take the disease than a child away from whose environment the primary case is at once removed. There must be on the face of it other circumstances at Sheffield which would, if possible to be properly tabulated, correct such an obvious fallacy. It is exactly equivalent to saying that there is not only no object in removing infective material from the neighbourhood of a healthy child, but that a child is less likely to take the disease if kept in an environment of infection. I leave it to your readers to judge whether there must be a fallacy or not in figures showing such results.

I repeatedly mentioned in my paper that the scarlet fever figures in Eastbourne were too small on which to base any teachings. It is comforting, however, that in a Borough with the much-maligned hospital isolation for scarlet fever pushed to extremes, even Dr. Waddy says our scarlet fever is insignificant. In Eastbourne we know hospital isolation and our insignificance of scarlet fever figures to be cause and effect.

I am, Sir,

Yours faithfully,

W. G. Willoughby,
Medical Officer of Health.

Town Hall, Eastbourne,
April 7th, 1905.

HOSPITAL ISOLATION.—A CORRECTION.

To the Editor of "Public Health."

Sir,

I gratefully acknowledge Dr. Millard's correction of the "rather unfortunate error" which appeared in the report of my paper on hospital isolation in the March issue of *Public Health*.

In discussing what happened in Leicester in 1892 after 144 scarlet fever patients were sent from hospital to make room for small-pox cases, I go on to say, "During the following two months 400 odd cases of scarlet fever occurred, compared with 90 during the previous ten months." In my original scroll I find the words "compared with *an average of* 90 during the previous ten months." Whether the omission was due to the printer or to my typist I cannot say, but with Dr. Millard's figures before me I was fully aware of the exact number notified. It was upon these figures —an average of 90 before closure, compared with an average of 200 after—that my argument was based. I cannot therefore see how my deductions are "completely vitiated" by the "correction."

Dr. Millard also says, it is a pity I did not refer to the Leicester experience of 1903, when a marked decrease of scarlet fever followed closure of the scarlet fever wards. I was not aware of such closure until months after my paper was written, and even now I have no information as to whether "the epidemic was well ablaze before the hospital was closed," as Dr. Millard tells us was the case in 1892, or whether the epidemic was dying out apart altogether from any influence good or bad which may or may not have been exercised by the hospital.

Yours, etc.,
WILLIAM SCATTERTY.

KEIGHLEY,
April 10th, 1905.

VACCINATION EXPENSES COMMITTEE.

To the Editor of "Public Health."

SIR,

Two important points are noticeable in the article on the Report of the Vaccination Expenses Committee in the April number of *Public Health* just to hand.

First, the word "maximum" is inserted instead of "minimum" in stating the fees recommended—a very serious mistake you will agree.

Second, no reference is made to the most important fact of all in the report, namely, that the claim of the public vaccinator to be made an "officer" with superannuation provision instead of a "contractor" liable to twenty-eight days' notice has been sustained, and the law is recommended to be altered to provide for this.

While the public vaccinators feel that the existing minimum was low enough, considering the work to be done, they welcome the change in their position foreshadowed by the Committee's recommendation.

I am, Sir, yours truly,
ALBERT E. COPE.

26, BESSBOROUGH GARDENS, WESTMINSTER, S.W.

DUTIES UNDER EDUCATION ACT.

To the Editor of "Public Health."

DEAR SIR,

I should be glad if any reader could inform me of the special duties of the Medical Officer to an Education Authority beyond those of the Medical Officer of Health for the district.

Has the Education Department issued any orders relative to the duties of Medical Officers apart from the duties of the Medical Officer of Health?

Yours,
D. P. H.

April 22nd, 1905.

PROCEEDINGS OF THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTITUTED, 1881. INCORPORATED, 1891.

A GENERAL MEETING of the Incorporated Society of Medical Officers of Health was held at 9, Adelphi Terrace, London, W.C., on Friday, March 10th, 1905. Present: Dr. J. F. J. Sykes (President, in the chair), and Drs. J. A. H. Brincker, Frank Robinson, James B. Wilkinson, W. M. Wanklyn, H. Meredith Richards, P. Caldwell Smith. A. Newsholme, Sidney Davies, Herbert Jones, Arnold Evans, and Professor Sheridan Delépine; also the following visitors: Professor Stewart Stockman, Dr. James M. McCall, Messrs. Wm. Hunting, F. T. Walley, A. F. Cameron, and Charles Slater.

Minutes.—It was resolved unanimously that the minutes of the previous General Meeting, on February 10th, having been printed and published in ***Public Health***, be taken as read, and they were duly signed by the Chairman.

Correspondence.—The Hon. Secretary read letters regretting inability to be present from Mr. William Field, M.P., Dr. John H. Bell, Dr. T. M. Legge, and Dr. H. E. Edlin.

Teaching of Hygiene.—The President called attention to the fact that at the General Meeting on November 11th, 1904, on the conclusion of the discussion on Dr. Heron's paper, it had been decided to appoint a committee to deal with the teaching of hygiene, and it was necessary that the matter should be proceeded with. It was resolved unanimously, "That the following members of the Society—the President, Drs. J. Groves, F. J. Allan, H. R. Kenwood, J. Kerr, Alfred Greenwood, A. Newsholme, H. M. Richards, and the Hon. Secretaries, together with Sir Patrick Manson, Miss Ravenhill, and Dr. G. A. Heron—be appointed a committee of the Society, with power to add to their number, to consider how best the teaching of hygiene in schools and the teaching of hygiene to teachers can be promoted."

Professor Sheridan Delépine then read a paper, entitled "The Causes of the Increased Prevalence of Anthrax in Great Britain," which was followed by an interesting discussion in which the following took part: Drs. A. Newsholme, Arnold Evans, J. F. J. Sykes, Frank Robinson, Professor Stockman, and Mr. Wm. Hunting.

A vote of thanks was unanimously accorded Professor Delépine for his paper.

A GENERAL MEETING of the Society of Medical Officers of Health was held at the Society's new premises, No. 1, Upper Montague Street, Russell Square, London, W.C., on Friday, April 14th, 1905. Present: Drs. J. F. J. Sykes, President (in the Chair), G. F. McCleary, J. A. H. Brincker, W. H. Symons, Alex. G. B. Foulerton, H. W. Beach, A. W. J. MacFadden, Frank Robinson, A. Newsholme, H. Meredith Richards, T. W. H. Garstang, G. H. Fosbroke, J. R. Kaye, J. Tubb-Thomas, W. H. Homer, Herbert Jones, S. G. Stoman, J. S. Tew, E. H. Snell, Edwd. F. Willoughby, James Wheatley, Eben Davis, J. Howard Jones, T. H. C. Stevenson, Joseph Priestley, P. Caldwell Smith, C. Sanders, W. G. Willoughby, Reginald

Dudfield, F. S. Crookshank, G. B. Millson, J. T. C. Nash, Harold Coates, Edward Seaton, James B. Wilkinson, Chas. E. Paget (members), Dr. C. J. Cullingworth, Miss V. E. M. Bennett, M.B., Miss Rosalind Paget, Miss Mary H. Williams, Miss Bentley, Mr. G. W. Duncan (Secretary of the Central Midwives Board), Messrs. J. M. Willoughby, and W. M. Willoughby (visitors).

The President, before proceeding with the ordinary business of the meeting, thought that the Society had reason to be congratulated upon the acquisition of the new premises in which they were meeting for the first time that evening. Another source of congratulation was the exceedingly handsome gift to the Society by Sir Shirley Murphy of the presidential table and suite of chairs which they had all had an opportunity of admiring, and he had great pleasure in moving the following resolution :—

"That they have heard with much pleasure of the splendid gift to the Society by Sir Shirley Murphy of a table and three chairs in carved black oak for use in the Society's large General Meeting Room at No. 1, Upper Montague Street, and that the best thanks of the Society be conveyed to Sir Shirley Murphy, and they further hope that the good example of Sir Shirley Murphy may be followed by other members of the Society."

The resolution having been duly seconded it was carried with acclamation.

REPORT OF COUNCIL.

The Hon. Sec. read the following Report of Council :—

Your Council report

1. That they have received a letter of thanks from Dr. R. O. Dudfield for re-electing him as the Society's representative on the Sanitary Inspectors' Examination Board.

2. That they have received a letter from Mr. Kent (the late Clerk), thanking the Society for the vote of ten guineas for his past services as clerk.

3. That they have heard, with regret, of the death of Mr. Edward Tidman, C.E., Associate of the Society, and Secretary to the Sanitary Inspectors' Association, and have instructed the Hon. Secretaries to send a letter of condolence to the relatives.

4. That they have received a letter from the Hon. Secretary of the Sanitary Inspectors' Examination Board, enclosing the Auditors' Report and Balance Sheet, showing a credit balance of £183 17s. 6d.

5. That they have received a letter from the Scottish Branch, stating that Dr. Alexander Robb, M.O.H., Paisley, has been elected as Hon. Secretary and Treasurer of the Branch in the place of Dr. Knight (resigned),

6. That they have unanimously elected as the Officers of the Society for the year 1905-6, the following: Treasurer, Dr. Millson; Hon Secs., Drs. Jones and Priestley; Editor, Dr. Allan; Hon. Solicitor, Mr. Robin. P. Hamp; Hon. Librarian, Dr. Meredith Richards.

7. That they have unanimously appointed as Auditors of the Society for the year 1905–6, Dr. O. Field and Mr. A. W. Warren, the latter to receive a fee of five guineas in connection therewith.

8. That they have received, and adopted, the Report of the Parliamentary Committee as follows :—

Your *Parliamentary Committee* report

(1) That they have carefully considered proposed alterations to the

Articles of Association, and have had before them in connection therewith the replies received from the Branches, and recommend the following alterations and amendments, and that the necessary extraordinary meetings of the Society be called for such a purpose.

Paragraph 1.—To do away with the term "Ordinary Members," and to make "Fellows" and "Associates" the two sub-divisions; and to alter all succeeding paragraphs as required in accordance with such re-arrangement.

Paragraph 2.—To eliminate the word "Incorporated" before the words "Society of Medical Officers of Health."

Paragraph 3.—To insert the word "Exhibitions" after the word "Meetings" in line 7.

Paragraphs 16 and 17.—To read: Fellows shall be (*a*) Medical Officers of Health (acting, or retired), whether in the British Isles and Dependencies, or elsewhere; (*b*) Medical Officers (Sanitary) of the Navy and Army (at home or abroad); (*c*) All Registered Medical Practitioners holding a Diploma in Sanitary Science, Public Health, or State Medicine under Section 21 of the Medical Act, 1886; (*d*) All Medical Inspectors of the Local Government Boards or other Government Departments, of England and Wales, Scotland and Ireland.

Provided that no such person as may be elected under sub-paragraphs (*b*) or (*c*) shall be eligible for office in, or shall take part in the government of the Society, unless he be a Medical Officer of Health (acting, or retired).

Paragraph 41 (*f*).—To read: An Honorary Solicitor or a Firm of Solicitors, and to add to 41 the following: (1) An Honorary Counsel; (2) An Honorary Architect or Surveyor; and to make such alterations in connection therewith in other paragraphs as may be found necessary.

Paragraph 42.—To add to the end of the first paragraph the words "or Hon. Fellows."

Paragraph 41 (*d*).—To read: Two Honorary Secretaries, of whom one shall be a Member of the Metropolitan Branch, and one a Member of a Provincial Branch.

(2) That they recommend the principle of a re-constitution of the Council on a *pro rata* basis of direct representation according to the number of Fellows of the various Branches, and have instructed the Officers to prepare a report on the subject as to the practical working of such a scheme, the number of persons to form the Council, a proviso for ensuring that each Hon. Sec. of a Branch shall be one of such Branch's representatives, the desirability (or otherwise) of the Vice-Presidents of the Society being *ex-officio* Members of the Council, etc.

9. That they have received, and adopted, the report of the Finance and Journal Committee, as follows:—

Your *Finance and Journal Committee* report

(1) That they have received, and are considering, a return as to the cost of railway travelling expenses for Members of the Council being paid by the Society, and not by the Branches (as at present).

(2) That they recommend that no Annual Dinner be held in October, 1905, but that such dinner be held during the time of the celebration of the Society's Jubilee in 1906.

(3) That they have referred to the New Premises Committee the question of the charges (if any) to be made for tea and light refreshments

to be supplied to Members of the Society at 1, Upper Montague Street, Russell Square.

10. That they have received and adopted the report of the Library Committee, as follows :—

Your *Library Committee* report

That they are proceeding with the indexing and cataloguing of the books, and in connection therewith are having prepared a book plate, with a design taken from the Official Badge of the Society, at a cost not exceeding two guineas.

11. That they have received, and adopted, the report of the New Premises Committee, as follows :—

Your *New Premises Committee* report

(1) That they have registered, as the Society's telegraphic address, the following : "Epidauros, London."

(2) That they have had fitted up a National telephone on "Message Rates," and that the number is 7,779, Gerrard.

(3) That they have made arrangements with the Executive Secretary and the Advertising Contractors to have the use of rooms on the premises.

12. That they have received, and adopted, the report of the School Hygiene Committee, as follows :—

Your *School Hygiene Committee* report

(1) That they have appointed as Chairman Sir Patrick Manson.

(2) That they have added as Members of the Committee Dr. Collie and Mr. Bruce, L.C.C.

(3) That they recommend that the Board of Education be asked to receive a Deputation from the Society, urging the Board to consider the necessity for the further teaching of hygiene to candidates for, and members of, the teaching profession, and that the School Hygiene Committee be empowered to arrange the constitution of the Deputation and to make such arrangements connected therewith as may be required.

13. That they have received and adopted the report of the Bye-laws New Buildings) Committee, as follows :—

Your *Bye-laws* (*New Buildings*) *Committee* report

(1) That they have elected as Chairman Dr. Sykes, the President of the Society.

(2) That they are still considering the suggested amendments of the Home Counties Branch.

14. That they recommend for election as Hon. Fellows of the Society the following distinguished foreigners : Drs. Biggs and Billings, United States ; Kitasato, Japan ; Pistor and Weyl, Germany ; Brouardel, Bertillon, Monod, and L. Martin, France ; Putzeys, Belgium ; Linroth, Sweden.

15. That they have received a letter from the Midland Branch suggesting the preparation of a statement showing the effect of the various decisions on the question of the definition of "drains" and "sewers" which have been given since the passing of the Public Health Acts (Amendment) Act, 1890, and in connection therewith have decided to take no action.

16. That they have arranged for the Provincial Meeting to be held within the area of the N.W. Branch, and have left the arrangements to the Hon. Secs. of the Society, and the Hon. Sec. of the N.W. Branch.

17. That they have left to the Jubilee Committee the selection of a

suitable President (outside of the Membership of the Society, if necessary) for the Jubilee year 1905–6.

18. That they have received an invitation from the Royal Institute of Public Health to appoint a Delegate to attend a Congress to be held in London in July, and in connection therewith, and also in connection with any other Congresses that may be held during the year 1905, have appointed any Members of the Society who wish to attend any, or all, of such Congresses; such Members to advise previously the Hon. Secretaries of the Society.

On the motion of Dr. Tubb Thomas, seconded by Dr. J. B. Wilkinson, it was resolved unanimously that the Report be received and adopted.

Election of President.—Resolved unanimously that the recommendation for President of the Society during the Jubilee year be left to the President in accordance with the recommendation of the Council.

ELECTIONS.

The following gentlemen having been duly nominated and balloted for were declared by the President to be unanimously elected :—

AS FELLOWS:

Goddard, Charles Ernest, M.D. L.R.C.P., M.R.C.S., Harrowdene Road, Wembley, Middlesex, M.O.H. Wembley U.D.

Harrison, Thomas Alexander, L.S.A. Lond., Sherburn, Durham, M.H.O. Durham R.D.

Kempster, Christopher Richard, L.R.C.P., M.R.C.S., 1 Albert Bridge Road, London, S.W., late M.O.H. Metropolitan Borough of Battersea.

Kingsford, Leslie, M.D. D.P.H., Borough Sanatorium, Brighton, Deputy M.O.H. Brighton, C.B.

Lawrence, Sidney Cameron, M.D., Ch.B., D.P.H., 21 Queen Street, Chesterfield, Duputy M.O.H. Borough of Chesterfield.

McNaught, James G., M.A., M.D., D.P.H., Major R.A.M.C., 16, Westhall Gardens, Edinburgh, M.O.H. Scottish Military District.

Simpson, George Augustus Garry, M.R.C.S., L.S.A., Lond., Churchfield Road, East Acton, London, W., M.O.H. Acton U.D.

AS ASSOCIATES:

Gavin, Frederick Charles, M.R.C.V.S., Public Health Department, Municipal Offices, Johannesburg.

Peddie, John, M.R.C.V.S., Public Health Department, Municipal Offices, Johannesburg.

Taylor, Daniel MacPherson, M.A., M.D., 9, Scarcroft Hill, York.

Several gentlemen were nominated as Fellows and Associates of the Society.

Suggested Federation of Medical Societies.—Resolved unanimously that the President be asked to ascertain what scheme is to be proposed in connection with the suggested federation of Medical Societies.

A paper* was read by Dr. G. H. Fosbroke, D.P.H., upon the Administration of the Midwives Act. In the discussion that followed there took part: Dr. Cullingworth, Dr. J. W. Hembrough, Miss V. E. M. Bennett, M.B., Dr. J. R. Kaye, Dr. Chas. E. Paget, Dr. Wilkinson, Dr. J. Howard Jones, Dr. Tubb-Thomas, Dr. Tew, Dr. C. Sanders, Dr. Edward Seaton, Dr. Herbert Jones, Mr. G. W. Duncan (Secretary of the Central Midwives Board), Dr. J. F. J. Sykes.

* The paper and discussion will appear in the June issue.

Metropolitan Branch.—An ordinary Meeting of the Branch was held at 9, Adelphi Terrace, Strand, W.C., on Friday, March 24th, 1905. Present: Drs. Roberts (President), Brown, McCleary, Millson, Sykes, P. C. Smith, Oliver Field, Frank Robinson, Bryant, A. W. Harris, Sidney Davies, Allan, R. Dudfield, T. O. Dudfield, and Priestley (Hon. Sec.)

A letter of thanks was read from Sir Shirley and Lady Murphy for their reception and entertainment by the Branch at the Annual Dinner, held Jan. 27th, 1905, on the occasion of Sir Shirley's knighthood.

Petition against the L.C.C. General Powers Bill, 1905.—The petition against the Bill, which had been lodged by the Hon. Sec. before the House of Commons, was approved.

Publication of Annual Reports.—The Branch decided to ask the Registrar-General to supply Metropolitan Medical Officers of Health with advance proof copies of the Annual Summary (in so far as Metropolitan statistics were concerned), thereby enabling annual reports of Metropolitan Medical Officers to be published at an earlier date, as required by the Local Government Board.

Sanatoria for Consumptives for the Metropolis.—Dr. T. O. Dudfield raised the question of the urgent need for the provision of sanatoria for consumptives for the metropolis by the Metropolitan Asylums' Board, who, by their past experience in connection with other infectious diseases, are eminently qualified to become the sanatorium authority for the Metropolis. After discussion, it was decided to organize an influential deputation to wait upon the Metropolitan Asylums' Board, to represent to the Board the desirability of such Board undertaking the duty of sanatorium authority for the Metropolis, at the earliest possible date; and that the following bodies be invited to join in the deputation (with power to add to their number):—

National Association for the Prevention of Consumption and other forms of Tuberculosis, Royal Institute of Public Health, Royal Sanitary Institute, National Health Society, Metropolitan Hospital Saturday and Sunday Funds, Royal College of Physicians of London, Royal College of Surgeons of England, Charity Organization Society, Mansion House Council (Dwellings of the Poor).

Drs. Roberts, Sykes, T. O. Dudfield, Parkes, Allan, and Priestley were appointed to represent the Branch.

Proposed alterations to Articles of Association.—The Branch decided to recommend the following alterations and amendments:—

Paragraph 1.—To do away with "Ordinary Members," and to make "Fellows" and "Associates" the two sub-divisions; and to alter all succeeding paragraphs as required in accordance with such re-arrangement.

Paragraph 2.—To do away with the word "Incorporated" before the words "Society of Medical Officers of Health."

Paragraph 3.—To insert the word "Exhibitions" after the word "Meetings" in line 7.

Paragraphs 16 and 17.—To read:—Fellows shall be:—

(*a*) Medical Officers of Health (acting or retired), whether in the British Isles and Dependencies, or elsewhere;

(*b*) Medical Officers (Sanitary) of the Navy and Army (at home or abroad);

(*c*) All Registered Medical Practitioners, qualified and registered (*i.e.* as the holders of Diplomas in Sanitary Science, Public Health, or State Medicine under Section 21 of the Medical Act 1886) for Appointments as Medical Officers of Health;

(*d*) All Medical Inspectors of the Local Government Boards, or other Government Departments, of England and Wales, Scotland and Ireland.

Paragraph 18.—To read :—" Associates shall be persons interested in the advancement of Public Health, *e.g.*, all members of Sanitary Authorities, Town Clerks, Surveyors, etc."

[Paragraph 30.—To be altered so that the subscription for *all* Associates shall be twenty-one shillings annually.]

Paragraph 40.—To read :—" The Treasurer of the Association shall pay in every year to the Treasurer of each of the Branches, two shillings and sixpence per Member for Branch Expenses, and that the railway fares of Branch Representatives of the Council of the Society, when attending Council Meetings or Meetings of Committees of the Council in London, shall be paid by the Society."

Paragraph 41 (d).—To read : " Two Honorary Secretaries, of whom one only shall be a Member of the Metropolitan Branch."

Paragraph 41 (f).—To read :—An Honorary Solicitor or Solicitors ; and add to 41 the following :—

1.—An Honorary Counsel ;

2.—An Honorary Architect or Surveyor ;

and to make such alterations in connection therewith in other paragraphs as may be found necessary.

Paragraph 42.—To add at the end of the first paragraph the words " *or* Hon. Fellows."

Dual Control in Schools, Factories and Workshops.—A discussion was opened by Dr. A. W. Harris, during which the difficulties arising from dual control by officers of Sanitary Authorities, and Government and other departments, were mentioned. It was finally *resolved :* " That a letter be written to the County Council (as the Educational Authority for London), asking them to instruct their officers to keep the Medical Officers of Health of the different Metropolitan districts notified at once (by the teachers of schools, etc.) as to the presence of infectious disease amongst the scholars of the different schools which are under the jurisdiction of the County Council, in accordance with the terms of the code of Regulations (issued by the County Council)."

North-Western Branch.—An ordinary meeting of the Branch was held in the Chemical Club, Victoria Hotel, on Friday, March 17th. Present : Drs. Vacher, Garstang, Gornall, Mussen, Barlow, Berry, Hanna, Chronnell, Hitchon, Hamilton, Greenwood, Edlin, Wheatley, Laird. Buchan, and M. Young, with Dr. C. W. Jones, of Hale, as a visitor. A letter of apology for absence was read from Dr. J. B. Wilkinson, President. It was resolved that Dr. Vacher take the chair.

Dr. Charles W. Jones, of Hale, was introduced by Dr. Garstang, and asked the permission of the Branch to lay before them certain directions which he had received from his Council as to attendance at the offices of the Council. After having heard the matter, it was moved by Dr. Garstang, seconded by Dr. Berry, and unanimously resolved : " That a vote of sympathy of the Branch with Dr. Jones in the circumstances related to the Branch be recorded on the minutes, and that it be further recorded that the Branch consider the attitude of the Sanitary Authority in the particular matter mentioned to them to be unreasonable."

Moved by Dr. Berry, seconded by Dr. Barlow, and unanimously resolved : " That this Branch respectfully represent to the Local Government Board that the system of making annual appointments of Medical

Officers of Health is one which is detrimental to the efficient carrying out of the duties of that office, and that the Board's attention be drawn to the terms of advertisement for the Abram Urban District Council appointment, in which it is stipulated that the appointee must reside within one mile radius of the Council Offices."

Dr. Greenwood then read an interesting paper on "School Sanitation." A vote of thanks was moved by Dr. Barlow, seconded by Dr. Wheatley, and supported by Drs. Gornall, Berry, Buchan, and M. Young, who took part in the discussion.

Southern Branch.—A Meeting was held at Southampton on April 7th, 1905. Present: Drs. Norman (President), Foulerton, Lauder, Griffith, and McCallin (visitor).

A considerable discussion took place on the suggested alterations of the Articles of Association, and the following resolutions were passed.

1. That the Branch is of opinion that the Fellowship of the Society should be extended to include Medical Inspectors of the Local Government Board and Home Office; but that, except in this particular, the qualifications for membership should remain unaltered.

2. That this Branch supports the resolutions passed by the Midland and North-Western Branches as to Provincial representation on the Council, and payment of expenses of representatives.

A paper was read by Dr. McCallin, Assistant M.O.H., Southampton, on the "Treatment of discharges in Scarlet Fever," which was discussed by those present.

After lunch at the South-Western Hotel the members were shown over the *Kenilworth Castle* by arrangement, and were much interested in the excellent provision for all classes.

Scottish Branch.—A meeting was held in Perth on 15th April. Present: Drs. Chalmers (President), Bruce, Graham, Nasmyth, Ross, Sinclair, and Robb.

Business.—Some time was spent in the consideration of the Education (Scotland) Bill, and then Dr Sinclair read some notes on an "Enquiry into the conditions of recently-born children in certain districts with a high infantile mortality." The enquiry was undertaken with the object of devising means whereby the high infantile death-rate in certain districts might be decreased. The difficulty of obtaining the notification of births sufficiently early was encountered at the outset, for it seems to be the custom to postpone the registration until towards the end of the period of three weeks allowed. As about one-third of the infant deaths occur during the first four weeks, it is impossible to make any personal observation of the general physical condition in the majority of these cases. Of 212 infants found alive, 56 were well nourished, 110 fairly nourished, and 46 badly nourished. Of the three classes, the percentages of those artificially fed were respectively 9, 12, and 22. Of 28 infants being artificially fed, in 3 cases only was the feeding satisfactory. Condensed milks, owing to the low cost and ease of preparation, seemed to be the most popular. Of the 46 badly-nourished infants, in 19 cases the mother was working out during pregnancy, often up to the time of confinement; in 14 cases the mother was in bad health; and in 18 cases it was acknowledged that alcohol was taken to excess. In 27 cases the father was irregularly employed. In the 46 families of which the badly-nourished infants were members there had been 243 children born; of these 85, or nearly 35 per cent of the offspring of these mothers, had died in childhood.

CURRENT PUBLIC HEALTH LITERATURE.

The Journal of the American Medical Association, Vol. XLIII.

(No. 1, July.) A Case of Typhoid Fever with Unusual Complications (uterine hæmorrhage, no pelvic disease, no miscarriage). Wm. E. Darnall.

The Home Treatment of Tuberculosis. By Dr. G. E. Papillon (Paris). (From *L'Assistance Familiale*, No. 7, 1904.)

Botulismus and the so-called Meat Poisonings, varieties, symptoms, method of death. Editorial.

(No. 2.) The Demands of the Child by Virtue of Right. By Chas. G. Kerley (Presidential Address, Section of Diseases of Children, A.M.A.).

Yellow Fever Epidemic in Texas in 1903. By G. M. Guiteras.

Recent Observations Concerning Bacillary Dysentery: Infectivity of dysenteric patients. The contact epidemic in Metz, described by Conradi in *Festschrift. z. sechzigsten Geburgstage.* V. R. Koch, 1903, 554.

Raw Oysters and Typhoid Fever. *Report by the New York Health Department.*

(No. 4.) Prevention of Diphtheria. (Effective isolation of diphtheria patients cannot always be carried out. Immunizing injections for the prevention of diphtheria are of great value in limiting spreading of the disease. In its general features it is like the usual prophylaxis of small-pox—isolation of the sick and vaccination of the exposed).

A Bacterial Standard for City Milk Supplies. (The recent action of the Boston Board of Health condemning milk or cream that contains more than 500,000 bacteria per cc. According to Park a suitable standard would be 500,000 per c.c. for milk entering the city, and 1,000,000 per cc. for milk delivered to the consumer.)

Agglutination of Typhoid Bacilli in Cases of Proteus and Staphylococcus Infection. (Agglutination of typhoid bacilli by typhoid serum is not a specific reaction. Non-typhoid infections may give a positive Widal reaction. Therefore, too much dependence should not be placed on this reaction.)

(No. 5.) Notes on Vaccine. By Charles T. McClintock. (Results of experiments undertaken to show the reactions and limitations of vaccine. Report of experiments on calves, rabbits, guinea-pigs, dogs, and various other animals. Failure of attempts to grow the vaccine organism. Conclusions:—

(1) Many of the domestic animals are susceptible to small-pox vaccine.

(2) The time of development varies notably, from the three days in a guinea-pig to from nine to eleven days in a dog. This variation appears to depend on the resistance of the animal, and apparently does not increase or decrease the virulence of the vaccine. Vaccine grown for seventeen generations on guinea-pigs, where it develops in three to four days, when inoculated on heifers or dogs, takes the usual time for development in those animals.

(3) In guinea-pigs and rabbits, full-grown animals are decidedly more susceptible than young ones.

(4) Vaccinal immunization in cattle is not to any notable extent transmitted to the fœtus.

(5) A great many chemicals have a destructive or germicidal action on bacteria, but in the list of chemicals thus far tried, none have been found which show any special or specific action against the vaccine organism.

(6) The vaccine organism is not killed by glycerin, chloroform, chloretone, potassium cyanide, carbolic acid, or quinine, when these chemicals are not used in too great strength. At the same time all the ordinary bacteria, contaminating the vaccine, are destroyed: all these agents that kill the bacteria in vaccine weaken it, some more than others, doubtless, but they all harm it to a certain extent. An apparent contradiction to this will be noticed. Better takes result from vaccine that has been several weeks in glycerin than from the same vaccine when used just after it is removed from the animal. This is doubtless due to the destruction of the bacteria present, and possibly to the dying out of the weak vaccine organisms, so that in the vaccine kept for several weeks only the vigorous resistant organisms are present. None of the agents mentioned will destroy the spores of bacteria should they be present in the vaccine.

(7) Contrary to the opinion of many observers, we have not found that the vaccine organism decreases in virulence by repeated inoculation on calves. At one time we carried a strain of vaccine through eighteen generations on calves in eighteen weeks, destroying the bacteria in the vaccine with chloretone before making each inoculation. At the end of the time there was no apparent loss of virulence. (Umeno reports 180 generations on calves with an increase in virulence.)

Professor Kitasato's Present Work. By Dr. Miajima (Expert of Lymph Institute, Tokio). (Description of the Institute for Infectious Diseases, the Serum Institute, and the Lymph Institute of which Kitasato is the founder and director. History; work in diphtheria, plague, tetanus, cholera, hydrophobia, dysentery, typhoid fever, tuberculosis, leprosy, malaria, kakke beri-beri, and small-pox.)

The United States Public Health and Marine-Hospital Service. (A historical sketch from establishment in 1796. (*Continued.*)

The Tuberculin Test. *Johns Hopkins Hospital Reports, 1903.* (It was applied in 400 cases of doubtful unsuspected tuberculosis: on the whole the analysis of the results obtained seem to be favourable to the test both as regards harmlessness and reliability. It was found specially useful in the diagnosis of tuberculous joints, and of tuberculous kidneys when no tubercle bacilli were found in the urine.)

Another Member of the Dysentery Group. By C. W. Duval (Boston City Hospital). (The organism differs from all hitherto described strains of the dysentery group, in its action on lactose and litmus milk. These distinctions in cultural features are in conformity with the variations in agglutination reaction. The bacillus is identical in morphology and in its action on mannite, dextrose, dextrin, and the more common culture media with the Flexner-Harris strain of *B. dysenteriæ*. The bacillus is agglutinated in high dilution with the blood of typhoid fever patients, also with the blood of rabbits immunized against typhoid. Likewise, *B. typhosus* is agglutinated with the blood of rabbits immunized to this organism. The production of common agglutinins shows a close relationship between this organism and the typhoid bacillus. Though this bacillus possesses properties in common with the typhoid bacillus, it has, however, more in common with the dysentery.)

Tuberculosis in the Jewish District of Chicago. Theodore B. Sachs. (Description of the Jewish district of Chicago. Hygienic conditions. Mode of life. Widespread occurrence of tuberculosis in the district. The so-called immunity of Jews from tuberculosis is greatly over-estimated.)

The Diagnosis of Scarlet Fever and Scarlatinoid Affections. Jay F. Schamberg.

(No. 7.) The Permanent Preservation of Anatomic, Embryologic, Pathologic, and Bacteriologic Specimens. W. M. L. Coplin.

(No. 10.) Further Studies of the Intra-cellular Toxins of Bacteria, especially the Colon Bacillus. V. C. Vaughan.

Fourth of July Tetanus—Effect of Publicity and Prophylaxis in reducing the Mortality.

A New Form of Throat Infection due to an Organism of the Öidium Group.

(No. 11.) The Relation of Acute Infections to Arterio-Sclerosis. W. S. Thayer and C. E. Brush, Junr.

(No. 12.) Arterio-Sclerosis due to Lead. F. S. Billings.

The Relation of Alcohol to Arterio-Sclerosis. R. C. Cabot.

Cortical Hæmorrhage following Scarlet Fever. E. E. Southard and F. N. Sims.

Boric Acid Poisoning. Report of a Fatal Case after packing a wound with half an ounce. C. L. Best.

(No. 15.) Amœbic Dysentery, its Local Lesions and Treatment. J. P. Tuttle.

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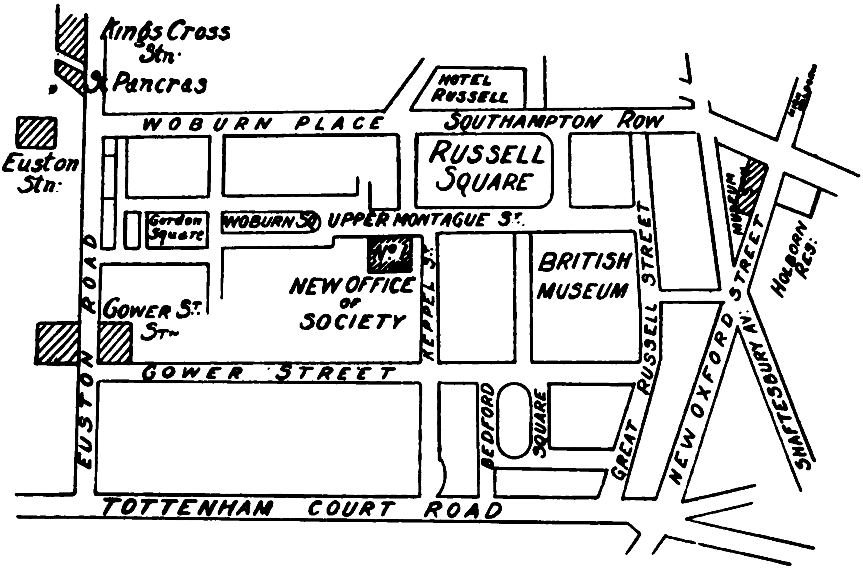

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RETURN CASES OF SCARLET FEVER AND DIPHTHERIA.
SCHEDULE OF ENQUIRIES.

With the present issue of Public Health, a copy of the Schedule of Enquiries which has recently been drawn up, after careful consideration by the Society, is enclosed, and Members of the Society are asked to make use of, and to fill in, the Schedules in connection with their statistics, and to return the same when filled in to the Hon. Secretaries, 1, Upper Montague Street, Russell Square, W.C., from whom additional copies of the Schedule may, at any time, be obtained free of charge.

Continued on p. xii.

MEETINGS OF THE SOCIETY.

NORTH-WESTERN BRANCH.

May 19th. "The Influence of Privy-Middens and Water-Closets on the Annual Epidemics of Zymotic Diarrhœa and Typhoid Fever," by Dr. A. W. Martin.

June 16th. "Discussion on the Housing of the Working Classes in Rural Districts." Opened by Dr. T. W. H. Garstang.

NORTHERN BRANCH.

June 23rd. At Hexham.
October 27th. At Newcastle-on-Tyne.

BIRMINGHAM AND MIDLAND BRANCH.

In consequence of the serious illness of Dr. Richmond, the secretarial business of the branch is being transacted entirely by Dr. Manley, 20, New Street, West Bromwich.

EPSOM COLLEGE.—Mrs. Skinner, widow of the late Medical Officer of Health for Willesden, is a candidate for a pension. Subscribers to this Fund are invited to give their votes in her favour.

STATISTICAL CONGRESS.—The International Statistical Institute holds its tenth session in London, 31st July to 5th August, 1905, as the guest of the Royal Statistical Society. Founded in its present form on the occasion of that Society's Jubilee in 1885, the International Institute has carried on the more valuable features of the work of the older series of International Congresses established in the middle of last century as the result of the labours of the late M. Quetelet, and the interest he provoked among the leading statisticians of Europe, on the occasion of the Great Exhibition of 1851.

THE Report already published on the Ventilation of the House of Commons is only a summary. The full report will be issued later.

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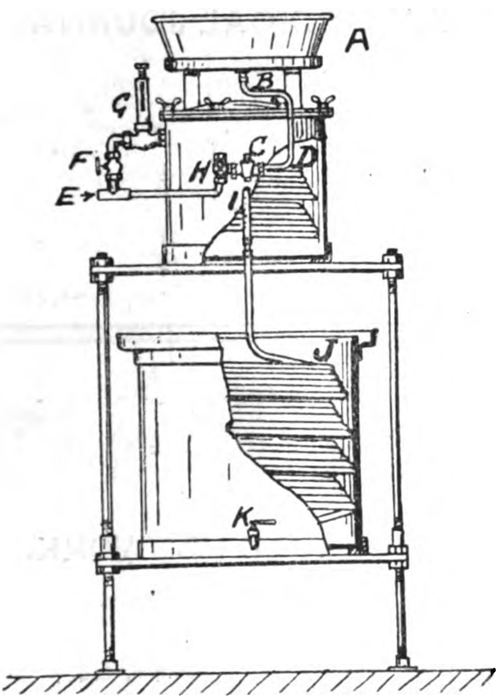

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CONTENTS.

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PAGE

EDITORIAL—

THE LONDON COUNTY COUNCIL AND THE PUBLIC HEALTH - 555

SPECIAL ARTICLES—

THE MIDWIVES ACT, 1902 (*G. H. Fosbroke, D.P.H. Camb.*) - 557

THE MIDWIVES ACT, 1902 (*Edward Sergeant, L.R.C.P., M.R.C.S., L.S.Sc.*) - - 583

THE BACTERIOLOGICAL EXAMINATION OF WATER (*John C. Thresh, M.D., etc., and W. S. Strachan, B.Sc.*) - - 594

PAGE

SPECIAL ARTICLES (*continued*)—

ATMOSPHERIC PRESSURE AND APOPLEXY (*W. H. Symons, M.D., D.P.H.*) - - - 602

A CRITICISM OF THE SALE OF WHISKY BILL, 1905 (*J. R. Currie, B.A. Oxon., M.B. Ch.B. Glas., D.P.H.*) - - 607

ANNOTATIONS—

CLARIFICATION OF ST. LOUIS WATER - - - - - 556

THE POLLUTION OF WATER-CRESS - - - - - - 556

Continued on Page vii.)

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CONTENTS—*continued.*

ANNOTATIONS (*continued*)—

	PAGE
Reward for Saving Life	582
Emission of Smoke from Chimneys	582
Pugging as a Cause of Dry-rot	601
Industrial Employment of Various Gases	601
Parliamentary Notes	614
Central Midwives Board	615

LAW REPORTS—

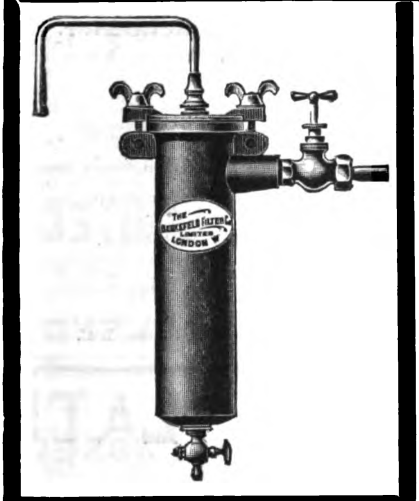
Smith *v.* Savage	616

LAW REPORTS (*continued*)—

	PAGE
Dirty and Contaminated Milk dealt with as Unsound Food	617

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH, THE—

North-Western Branch	618
NOTICES	xi, xii, xiii



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PUBLIC HEALTH:

The Journal of the Incorporated Society of Medical Officers of Health.

VOL. XVII. No. 9. JUNE, 1905.

EDITORIAL.

THE LONDON COUNTY COUNCIL AND THE PUBLIC HEALTH.

THAT infectious disease (including tuberculosis) is at times spread by infected milk is well known and acknowledged by all sanitarians, and endeavours are rightly made, from time to time, to increase the powers of Sanitary Authorities for dealing with such an important and vital subject. The London County Council appeared to be alive to this pressing need, and, urged on by the Metropolitan Sanitary Authorities, the Metropolitan Branch of the Society of Medical Officers of Health, and others, decided to introduce much-needed Clauses to deal with this matter in their General Powers Bill, 1905. These Clauses appeared in the Bill, and powers were asked for the more efficient dealing not only with milk that has been contaminated and likely to cause such infectious disease or tuberculosis in those consuming it, but also with milk that is found to be for any reason unsound, unwholesome, or unfit for the food of man. These Clauses were approved of by all as much needed for London, though diverse opinions were held as to the bodies to be entrusted with the carrying out and administrating of them. It was felt keenly by the majority of the Metropolitan City and Borough Councils, that any further powers should be given to those administrative bodies which had already been entrusted with the existing similar powers over infected milk, *viz.*, the City and Borough Councils of the Metropolis. Indeed, when this General Powers Bill, 1905, came before the House of Commons, an instruction was given by the House to their Sanitary and Police Purposes Committee that the powers asked for by the London County Council, which were admitted by the House to be important, and much needed for London, should be given to (and wielded by) the Metropolitan City and Borough Councils, and not to the London County Council.

Nothing could be simpler and fairer, at least in the opinion of those most competent to judge. What did the London County Council do, however? They withdrew the whole of these Clauses, with the result that London is left to the further ravages of infected and unwholesome milk. Though the London County Council admit that the powers asked for are much needed for London, they are still willing to withdraw their application for such powers in what would appear to be childish pique, because Parliament, in its wisdom, was of opinion that the powers would be more satisfactorily and more efficiently administered by the different Metropolitan Sanitary Authorities than by them. If the result were not so serious for the inhabitants of London, the action of the London County Council might be dismissed as simply Gilbertian. Such tactics in a body which poses as *the* sanitary authority of London ought not to, and we hope will not, be readily forgiven.

CLARIFICATION OF ST. LOUIS WATER.—This system consists in mixing solutions of sulphate of iron and lime with the water, as it is pumped from the Mississippi River. The results achieved by this simple, cheap, and harmless method of purifying water are remarkable. St. Louis now has clear water. There is a decrease in the number of typhoid cases in this city. The city bacteriologist showed that the present system of clarification rids the water of about 94 per cent of the bacteria.

THE POLLUTION OF WATERCRESS.—The Medical Officer of Health to the London County Council has presented a report on the condition of watercress beds in and around London, together with the reports by Dr. Clowes and Dr. A. Houston as to the results of the chemical analysis and bacteriological examination of samples of the water taken from the beds. Sir Shirley Murphy estimates that the annual consumption of watercress in London amounts to 1,500 tons. All the known beds supplying cress to London within 50 miles of the county were visited. These beds, 120 in number, varied in size from less than a quarter of an acre to nearly 40 acres, and in most cases samples of water were taken from each set of beds. The water was ascertained to be derived from various sources. The condition of the beds varied considerably, very strict precautions being taken in one or two instances to prevent risk of contamination, while in some cases the beds were exposed to the risk of pollution from surface drainage, manure, waste liquids from offensive trades, house refuse, cesspools, piggeries, and the effluents of sewage farms. The results of the inquiry show that cress of the best quality can be grown under conditions to which, from a public health point of view, no exception can be taken; and, owing to the extent to which careful washing eliminates impurity, there is no material risk in consuming the watercress supplied from most of the beds. Objection must, however, be taken on topographical, chemical, and bacteriological grounds to certain beds, and effort should be made to prevent the consumption of watercress from them

THE MIDWIVES ACT, 1902.*

By G. H. FOSBROKE, D.P.H. Camb.,
County Medical Officer, Worcestershire.

One of your Hon. Secretaries having asked me to open a discussion upon the Midwives Act, 1902, I consented to do so, but only with considerable reluctance, as I should have preferred that the subject had been placed in abler hands.

At a meeting of this kind it is unnecessary, as a prelude to my remarks, to quote the Act at great length, for probably many now present know more about it than I do.

I must, however, give a brief outline of a few of its provisions, in order to promote discussion upon some questions I wish to lay before you.

In the first place I would remind you that the Act, which "is intended to secure the better training of midwives and to regulate their practice," was passed on July 31, 1902, and came into operation on April 1, 1903.

In spite of the fact that considerable opposition was encountered before it became law, I believe much good will result from its enactment; for it should, and doubtless will, raise the standard of midwives, and ensure that parturient women shall, as far as practicable, have the benefit of properly-trained midwives.

That this is very necessary there can be no doubt, since it is believed that at least 60 per cent or even more of the births in England and Wales are attended by midwives, and it is known that there are some 2,000 deaths annually from puerperal fever.

That the desirable change can be brought about precipitately is not to be expected, and the promoters of the Act evidently sought to bring it into operation by degrees, and without depriving uneducated but well-meaning midwives of their livelihood.

Administration, as you know, devolves on the Central Midwives Board and Local Supervising Authorities.

Of the constitution of the Central Midwives Board it is unnecessary to speak, as Section 3 of the Act defines it.

I would, however, say that the present Board includes five medical men, three ladies, and one County Councillor.

This Board has, *inter alia*, framed rules to regulate the enrolment of midwives, and as to their training, examination, supervision, etc. Up to the 1st of April of this year any woman who had been in bona-fide practice prior to July 31, 1901, and could produce evidence of trustworthiness, sobriety, and good moral character, could claim to be enrolled; and it is this class of midwife which constitutes by far the greater proportion of those hitherto enrolled. For instance, of the 581 midwives we have visited in Worcestershire, 559 (96 per cent) come under this category.

---

* Read at the Meeting of the Society of Medical Officers of Health on April 14, 1905.

From April 1 last, no woman can use the title "midwife" unless she is enrolled; but an unenrolled midwife can continue to practise until March 31, 1910, if she does not take that title or imply in any way that she is certified under the Act.

After April 1, 1910, no woman will be allowed "habitually" and "for gain" to attend women in childbirth otherwise than under the direction of a qualified medical practitioner, unless she is certified under the Act. The stipulation "under the direction of a qualified medical practitioner" needs defining, for it is not clear whether or not the medical man must actually be in attendance. Without doubt this will have to be definitely settled, otherwise the pernicious system of "covering," at one time not altogether uncommon with unqualified medical assistants, may arise. I believe this question has already been brought to the notice of the General Medical Council.

Part I of the Provisional Roll, 1905, issued by the Central Midwives Board, shows that up to December, 1904, 11,476 midwives had enrolled. The names are given in alphabetical order in the roll, and not classified according to county or other areas; consequently it is a task of some magnitude to pick out from the roll the names of midwives which Local Supervising Authorities have to control. This being the case, my County Council wrote the Board in April, 1904, asking if it would not be possible to keep separate lists for each county. The Secretary of the Board replied (April 13, 1904):—

"As applications are being received at this office in considerable numbers daily, it is impossible to keep the Roll anything like up-to-date. Until after the April 1, 1905, it is bound to be more or less in a provisional state. I regret that the great pressure of work in this office, and the means at my disposal, make it impossible for me to adopt your excellent suggestion of keeping separate lists of midwives according to their geographical distribution."

The Local Supervising Authorities include the Councils of Counties, or County Boroughs, throughout England and Wales.

County Councils are empowered to carry out the Act themselves, or, should they prefer, to delegate their powers and duties, with or without restrictions, either to a Committee appointed by them, or to District Councils. If the latter delegation be decided upon, any expenses incurred by the District Councils (to an amount not exceeding a specified sum) have to be repaid to District Councils by County Councils.

In the latter part of 1903 the Central Midwives Board issued a memorandum to County Councils, urging the advisability of retaining the administrative duties assigned to them as far as possible in the hands of a Committee directly appointed by themselves, in order, as the Board said, "to prevent the possibility of local rivalries and jealousies interfering with the carrying out of the provisions of the Act."

From an epitome of replies received from English and Welsh counties with reference to the administration of the Act, issued by the Clerk of Committees of the Cumberland County Council (C. W. Allan Hodgson, Esq.) in November, 1904, I gather that of the 61 County Councils communicated with, 48 stated that they had retained the power in their own hands, 7 had delegated them to District Councils, 2 had come to no decision in the matter, and 4 had not replied.

Of the 48 who had retained the powers, 5 had not referred them to any special Committee, 18 had appointed special Committees, 10 had referred the powers to their Sanitary Committee, 6 to their General Purposes Committee, 1 to their District and Parish Councils Committee, and 1 to their Bye-laws Committee.

Personally, I hold that the 48 Councils who decided to retain the powers in their own hands and to administer them through one or other of their Committees came to the right conclusion; for I believe that delegation to District Councils would neither be advantageous nor economical, nor do I think it would tend to uniformity of action. Doubtless the desire of County Councils to directly supervise their own expenditure, as well as other reasons, induced the majority to come to the conclusion they did.

I shall endeavour to show later on that the services of District Medical Officers of Health can be advantageously enlisted for the discharge of certain duties; and if Medical Officers consent to undertake them, they should be paid suitable fees by Local Supervising Authorities.

Mr. Hodgson's epitome shows that in twenty-seven instances the Administrative Committees are composed wholly of members of the County Councils, and that in seventeen others members have been co-opted. Sixteen of the latter selected ladies.

In my own county I advised that the duties should be wholly delegated to a Special Committee with power to co-opt ladies. This recommendation was adopted, and the Worcestershire Committee consists of nine County Councillors and five ladies.

I am aware that some County Medical Officers do not favour the appointment of ladies, but eighteen months' experience convinces me that, provided ladies having a business capacity and general interest in the work can be found, their appointment is attended with success.

I am glad to say that the administration of the Act is compulsory; for Section 8 reads: "It shall be the duty of the Local Supervising Authority:—

"1. To exercise general supervision over all midwives practising within their area in accordance with the rules to be laid down under this Act.

"2. To investigate charges of malpractice, negligence, or misconduct on the part of any midwife practising within their area, and should a *prima facie* case be established, to report the same to the Central Midwives Board.

"3. To suspend any midwife from practice, in accordance with the rules under this Act, if such suspension appears necessary in order to prevent the spread of infection.

"4. To report at once to the said Board the name of any midwife practising in their area convicted of an offence.

"5. During the month of January of each year to supply the Secretary of the Central Midwives Board with the names and addresses of all midwives who, during the preceding year, have notified their intention to practise within their area, and to keep a current copy of the roll of midwives, accessible at all reasonable times for public inspection.

"6. To report at once to the Central Midwives Board the death of any midwife or any change in the name or address of any midwife in their area, so that the necessary alteration may be made in the roll.

"7. To give due notice of the effect of the Act, so far as practicable, to persons at present using the title of midwife."

Now a few words as to the Executive Officers of Supervising Authorities.

Legal matters will, of course, be attended to by the Clerks of the Councils; but, as the Central Board have pointed out, supervision should be regarded as at least in part a medical duty, and the County Medical Officer or the medical adviser specially appointed should be empowered to act as Chief Executive Officer.

I regret to say that it was necessary for the Central Board to include the proviso "or the Medical Adviser specially appointed," but such was inevitable; for although County Borough Councils are obliged to appoint Medical Officers of Health, County Councils are not compelled to do so. The passing of this Act has, however, forced the hands of some County Councils who had failed in that respect.

From a return ordered by the House of Commons to be printed on 8th August, 1904, it appears that 25 provincial County Councils in England and 1 in Wales have appointed Medical Officers of Health:

and that no less than 24 in England and 11 in Wales have not done so. In other words, 51 per cent of the County Councils in England and 8·3 per cent of those in Wales have County Medical Officers. In counties where County Medical Officers have been appointed, the administration of the Act has, without exception, been entrusted to them, although I do not suppose it was anticipated that they could permanently carry out detail supervision without assistance. Take the case of Worcestershire for example, which has 600 midwives; how would it be possible for me to interview them three times a year each, which is the least number of times they should be seen?

From Mr. Hodgson's return I gather that up to November last, in 18 instances no arrangements as to inspection of midwives' appliances had been made, in 10 this work is as yet left to County Medical Officers without assistance, in 12 subordinate Lady Inspectors have been appointed, and in 2 District Medical Officers act as assistants.

Two of the assistants are said to be paid by fees per case visited, and the remainder by salaries varying from £90 to £120 per annum. In three instances the salaries paid are but £80, £50, and £20 respectively. In those instances where the remuneration of County Medical Officers was fixed prior to November last, it varied from £50 to £100 per annum, with allowances for travelling expenses. In one county at least (and I believe another also) "Women Health Visitors" have been chosen as assistants; but although the Worcestershire County Council have five such officials—the first appointed in 1897—I did not see my way to advise that duties under the Midwives Act should be entrusted to them, in spite of the fact that some are qualified midwives. My reason for this was, that our Health Missioners are mainly concerned in grappling with excessive infant mortality, and as their functions are strictly local, they would not harmonize with those required by the Midwives Act. Last August my Supervising Authority empowered me to employ an assistant, and I was fortunate enough to secure the services of a Lady Doctor (M.B., B.Sc. Lond., D.P.H. Camb.), the wife of a medical man.

Quite recently my County Council have appointed a Sanitary Education Committee to supervise the sanitation of schools and undertake the inspection of children in elementary schools, and approved my suggestion that this lady should also be officially associated with me in this work.

Although, strictly speaking, supervision is limited to enrolled midwives, nevertheless in Worcestershire all known midwives have been interviewed either by my assistant or by me. In doing this, every effort was made to avoid resentment on the part of unenrolled women, and apparently with success, for I was not a little surprised to find that so many women welcomed the hints we gave them. The preliminary lists we prepared showed that there are, as I have previously said, about 600 practising midwives in the county, or, in other words, there is 1 midwife to every 625 of the population. Up to February 28 last we had received notice that 230 of these had enrolled and 70 had applied for enrolment. Altogether we have visited 581 enrolled and unenrolled midwives, and find that of these, 11 per cent can neither read nor write, 17 per cent are over sixty-five years of age, 8 per cent are very dirty either as regards their bodies or clothes, 10 per cent have filthy houses, 16 per cent were found not to wear washable dresses, and there are good reasons for thinking that 5 per cent drink.

I will now pass on to the consideration of the rules framed by the Central Midwives Board for "regulating, supervising, and restricting within due limits the practice of midwives."

These rules received the assent of the Privy Council on August 12, 1903, and remain in force for three years. In December last I reported to my Supervising Authority certain difficulties I had encountered in carrying out these rules, and consequently the attention of the Central Midwives Board was drawn to them. Subsequently the Chairman of the Board requested me to send him my suggestions with regard to the criticisms I had made; and I have since learnt that the rules will be revised towards the end of this year. I venture, therefore, to suggest that if any difficulties have been met with in other administrative areas, they should be brought to the notice of the Board, who would, I believe, be prepared to consider them when amending the rules.

Rule 1, Section E, states that "the midwife must be scrupulously clean in every way, because the smallest particle of decomposing matter may set up puerperal fever. She must wear a dress of washable material, and over it a clean, washable apron."

This, without doubt, is one of the most important rules which Local Supervising Authorities have to enforce; for, as I have shown, many midwives do not appreciate the extreme importance of this requirement.

Under the rules it is not permissible for a midwife attending a case in which there are foul-smelling discharges to go direct to another case without changing her dress and thoroughly cleansing and disinfecting her hands and forearms and appliances. As an instance of the disregard with which this rule is sometimes treated, I may mention that I met with a very dirty midwife with a large practice, who had freely-discharging ulcers on her legs, which she dressed with a single layer of rag.

When called to a confinement, midwives are required to take with them (Section E, Rule 2):—

(*a*) An appliance for giving vaginal injections, an appliance for giving enemata, a catheter, a pair of scissors, a clinical thermometer, and a nail-brush.

(*b*) An efficient antiseptic for disinfecting the hands, etc.

(*c*) An antiseptic for douching in special cases.

(*d*) An antiseptic lubricant for smearing the fingers, catheters, douche nozzles, and enema nozzles before they touch the patient.

Such is part of the stock-in-trade which midwives have to provide.

Well-trained and careful midwives might, doubtless, be trusted with such instruments without ill-effect; but, on the other hand, I know many women in whose hands they would be extremely harmful, and who candidly admit that they do not know how to use them.

Of what good, I would ask, can a thermometer be if the midwife cannot read? Furthermore, many who can read do not know how to take temperatures. Under these circumstances, how can a midwife carry out the rule which requires her to send for a registered medical practitioner when there is a "rise of temperature above 100·4° F., with quickening of the pulse for more than twenty-four hours"?

Again, I do not consider that it is safe to put a catheter into the hands of an untrained, ignorant midwife.

As regards appliances for giving vaginal injections, I am distinctly of opinion that, as far as the majority of midwives are concerned, the rule is better honoured in the breach than in the observance; in fact, I do all I can to induce midwives not to give vaginal injections unless ordered by a medical practitioner. A case has lately come to my notice where a midwife, who had been in practice for years, had never used a syringe until the rules obliged her to obtain it; and, having got one, she thought she must use it, with the result that puerperal fever ensued. Professor Byers has shown that the results of midwifery practice have improved since vaginal douching has become less frequent, and that puerperal fever is always due to micro-organisms introduced from without, *i.e.* from the patient's external genitals, or from the clothes, or bed, or from the hands, instruments, or clothes of attendants. Hence the obvious necessity of insisting that Rules E, 3 and 4, requiring midwives to disinfect the hands, forearms, and instruments before touching patients' genital organs, should be scrupulously carried out.

I venture to say that the only appliances, of those specified in the rules, which untrained midwives should use are an enema, a pair of scissors, a nail brush (and as to which there should be no stint), and a thermometer, provided they can read it.

With regard to antiseptics, in skilled hands no doubt the use of perchloride of mercury (1–1000) for disinfecting hands, catheters, etc., is desirable; but there are comparatively few midwives who should be advised to use it. Fortunately, as it is a scheduled poison, many would have difficulty in obtaining it. The antiseptics I recommend midwives to use before touching their patients are cyllin (creolin—one teaspoonful to half a pint of water) for disinfecting the hands (after a thorough scrubbing with a nail brush, soap and water) and carbolic soap for smearing fingers and instruments. Should they ever undertake vaginal injections, I am advised by an eminent obstetric physician that "Condy's Fluid" is best for the purpose.

Rule 20 refers to the "bag of appliances" which midwives have to provide. Some midwives have expended excessive amounts on such purchases; one I know paid £1 18s. 6d.

The provision of a costly leather bag is, in my opinion, neither necessary nor desirable, and entails an outlay which many midwives can ill afford. It is not desirable, because it often happens that dirty instruments are put into the bag, and although these may be subsequently cleansed, the bag is left untouched.

One Worcestershire midwife was found to store her appliances in a luncheon basket, and another in a box in which a syringe used for an abscess was kept. This needs no comment.

I understand that Dr. Barwise advises the Derbyshire midwives to make a washable white linen bag, with pockets for the various instruments, so arranged that it can be enclosed in a waterproof covering. Any midwife can, if she likes, make such a thing, which not only has the advantage of being cheap as well as effective, but also that of being easily washed. This plan certainly commends itself to me, and I intend to advise the majority of the Worcestershire midwives to adopt it.

As I have said, Section 8 (3) of the Act imposes upon Local Supervising Authorities the duty of suspending a midwife from practice if such suspension appears necessary in order to prevent the spread of infection.

In order that the Authorities may learn of infectious cases, midwives are required to notify by post within twelve hours any case of puerperal fever which occurs in their practice. At least I am requiring midwives to send such notices, although Rule 18 (3) is not very definite In this, however, I am supported by the Secretary of the Central Midwives Board, although he tells me he only expresses his personal opinion, this point not having been decided by a court of law.

As Dr. Charles Paget, in his excellent article published in *The Practitioner* for March last, states: "The notification of puerperal fever and other infectious diseases to the Local Supervising Authority is independent of and in addition to that notification to the Local Sanitary Authority which is obligatory under the Infectious Diseases Prevention Acts. It will therefore happen, particularly in rural districts situated at some distance from the central office of the Local Supervising Authorities—assuming that this is the County Council—that the knowledge of the occurrence of a case of puerperal fever will reach the District Medical Officer some hours before it does the County Medical Officer of Health or other medical adviser.

In the Administrative County of Worcester, with its estimated population of 375,000, the average yearly number of cases of puerperal fever notified to the Local Sanitary Authorities during the decade 1894–1903 was 18, and the corresponding average number of deaths was 9.

Latterly I have been called upon to enquire into ten cases of puerperal fever (four of which were fatal) associated with midwives, and in each instance I only heard of the cases through the courtesy of the District Medical Officers, the midwives having failed to report them. For this and other reasons my Authority has adopted a scheme originated by Dr. Barwise (Derbyshire), by which the Local Supervising Authority arranges with District Medical Officers of Health for a fee of 10s. 6d. per case to promptly forward to the County Council, upon specified forms, a report of each case of puerperal fever notified in their districts; for although Medical Officers of Health are called upon to report to their local authorities upon such cases, there is no obligation for them to report to County Councils.

I need not say that immediately a case of puerperal fever occurs, Local Supervising Authorities should satisfy themselves that the midwives have taken every precaution against spreading the disease, and as to which I know so many midwives are grossly indifferent.

Rule 5, Section E, is a clause which I lose no opportunity of impressing upon midwives, and reads:—

"Whenever a midwife has been in attendance upon a patient suffering from puerperal fever, or from any other illness supposed to be infectious, she must disinfect herself and all her instruments and other appliances, to the satisfaction of the Local Sanitary Authority, and must have her clothing thoroughly disinfected before going to another labour. Unless otherwise directed by the Local Supervising Authority, all washable clothing should be boiled, and other clothing should be sent to be stoved (by the Local Sanitary Authority), and then exposed freely to the open air for several days."

Here, be it observed, a midwife is required to "disinfect herself and all her instruments and other appliances to the satisfaction of the

Local Sanitary Authority," not to the satisfaction of the Local Supervising Authority. Hence another reason for co-operation between District and County Officials. This rule also requires that "all washable clothing should be boiled, and other clothing should be sent to be stoved by the Local Sanitary Authority." The word "stoved" is indefinite; and consequently my Supervising Authority have asked the Central Midwives Board to be good enough to state whether they mean disinfection of clothing in the stoves ordinarily used for destroying parasitic diseases, such as scabies, or in an efficient steam disinfector. To this query as yet no reply (beyond acknowledgment) has been received.

I believe that Local Authorities generally throughout the country are by no means adequately supplied with efficient disinfectors; certainly such is the case in Worcestershire, even though isolation hospital accommodation is undoubtedly good there. The Administrative County of Worcester contains 30 Sanitary Authorities (13 Urban and 17 Rural), 10 of whom have made no provision for disinfecting infected clothing by means of an efficient apparatus; therefore, under present arrangements it would be useless for midwives in these districts to send infected clothing "to be stoved by the Local Sanitary Authority."

In nineteen other instances in that county the disinfectors are placed at the isolation hospitals. Such being the case, to comply with the Central Midwives Board's Rule, the midwives in many instances would have to send their clothes long distances, and occasionally as far as ten or eleven miles.

Furthermore, the charges made for the use of disinfectors are, in many instances, prohibitive, so far as midwives are concerned. Although the sanitary powers of County Councils are limited, too limited I should say, yet I think it will generally be conceded that the pressure some Councils bring to bear on defaulting Sanitary Authorities has caused good sanitary work to be carried out which would otherwise have been shelved. I am sorry to say that the Local Government Board do not assist County Councils to compel Local Authorities to provide efficient disinfectors; at least such is my experience.

Taking all these circumstances into consideration, it becomes a matter of supreme importance to strictly carry out the rule requiring midwives to "wear a dress of washable material, and over it a clean, washable apron," as well as "to have the sleeves of their dresses made so that the midwife can tuck them well up above the elbows."

In connection with Rule 17, which sets forth that under specified conditions midwives "must decline to attend alone and must advise that a registered medical practitioner be sent for." I have been asked by more than one midwife, if a doctor is required and the patient declines to allow him to be called in, is she to "decline to attend alone"? In such a case certainly the midwife not only has to "advise that a Registered Medical Practitioner be sent for," but she is also required "to decline to attend alone." Here is an instance in which I think discretionary power and common sense will have to be brought to bear.

A question which has been freely discussed by the medical profession, and as to which midwives are constantly asking for advice, is, if a doctor be necessary, and the patient, although not eligible for poor-law relief, is unable to pay, who is to do so?

The Act makes no provision for the payment of medical men sent for by midwives, although the latter have no option in the matter; consequently the Central Midwives Board have passed a resolution: "That inasmuch as no provision is made in the Midwives Act for the payment of legally qualified practitioners, the Government be requested to take the necessary steps for amending the Act, by introducing a section or otherwise to provide for the payment of legally qualified medical practitioners when called in by midwives in difficult cases."

This question (see *Brit. Med. Journal* of March 11 last) has been carefully considered by the British Medical Association, who prepared a Memorandum, from which it appeared that two main proposals had been made for the payment of medical men called in. The first was that County Councils should undertake to arrange that there shall be in every district some medical man or men on whom midwives could rely to attend when required, and the County Council should make themselves responsible for their remuneration. The alternative suggestion was that the medical practitioner should look for payment direct to his patient, except in the case of those who may be suitable objects for medical relief.

At the meeting at which these questions were discussed it was pointed out that the payment or non-payment by a Local Supervising Authority might depend upon whether or not it had a Local Government Board auditor. If there were a Local Government Board auditor he would probably surcharge any fee paid. The Manchester Medical Guild approached the Local Government Board upon the subject, who replied (Feb. 28, 1905), "That it seems to the Board that if a Town Council or other Local Authority for the execution of the Public Health Act, 1875, are willing to pay for the medical assistance required, the provision of Section 133 of that Act might possibly be available." "On the other hand a case of the kind might conceivably come within Section 2 of the Poor Law Amendment Act, 1848 (11 and 12

Vict., ch. 110) and the Guardians might then, if they wished, pay for the medical assistance required."

As stated in the *Brit. Med. Journal*, "The opinion given by the Local Government Board . . . is expressed in very guarded terms: but it would seem to indicate that the Board will be ready to instruct their auditor to pass accounts of Local Authorities containing items for the fees of medical men summoned by midwives chargeable under either of the Acts referred to."

Guarded as this reply is, it is perfectly obvious that as County Councils are not executive Authorities under the Public Health Act, nor do they come under Section 2 of the Poor Law Amendment Act, 1848. they have no power to pay medical men. Much might be said for and against County Councils being made responsible for such payments, but this question is too comprehensive for me to venture to further discuss on the present occasion. Rule 18 obliges midwives in all cases in which the death of the mother or of the child occurs before the attendance of a registered medical practitioner, to notify the same to the Local Supervising Authority. "Still births" are required to be notified in like manner. In my county, and doubtless others too, the midwives, in consequence of repeated warnings, are now reporting considerable numbers of these "still births," and I keep a record of them showing the midwife in attendance. If it appears that any midwife has two or three to her credit, inquiries will be made as to the character of the woman; for such inquiries would, I feel sure, do good. As yet I have not been called upon to take action.

Rule 15 prohibits midwives from laying out the dead, or following any occupation that is in its nature liable to be a source of infection. This rule was very necessary, for the business of some midwives formerly included, not only attendance upon lying-in women, but also the laying out of dead persons. As an instance of this, I may mention that I heard a County Medical Officer recently state, that he knew of a brass plate bearing the inscription, "Midwife and Undertaker." Discretion in the administration of this most desirable rule should, however, in my opinion be used: for on one occasion I was asked by a midwife, if her patient died, may she lay her out, as Rule 15 precludes this? Strictly speaking I should have given an unhesitating negative reply: instead of which I gave an affirmative answer, making it a condition that the midwife carried out Rule 5 with regard to disinfection.

Not only are Supervising Authorities required to secure proper inspection of every midwife's appliances, but also of their case-books. The books which midwives have to keep, are a "Record of sending for medical help" and a "Register of cases": and although these are simple, not a few midwives experience difficulty in doing so. The illiterates of course cannot keep them, and either discard them altogether or get some friend to write them up. In framing the notice contained in The Medical Aid Record, the Central Midwives Board have omitted to include a line whereby the address of the midwife should be given; and consequently I have on more than one occasion had considerable difficulty in ascertaining where the midwife who signed the form actually lived. This omission the secretary tells me will be rectified in future editions. In the "Register of Cases" a column appears in which "duration of 1st, 2nd, and 3rd stages of labour" is to be recorded, but I find that very few midwives can fill this up, as most of them do not know what the stages are.

Another column in this book is for the "Presentation" to be given. Most midwives now in practice know nothing about the various "presentations," and of course cannot supply this information. Nor do I think untrained ones should be encouraged to fill up this column, for to quote Professor Byers, "Meddlesome midwifery is to be avoided (and) vaginal examination is always dangerous, and never to be employed except to elicit information necessary in the interest of the patient, and not to be obtained in any other way, for example by abdominal palpation."

Inspection of midwives' residences is another duty imposed on Supervising Authorities, and a very necessary one one too; for I have already mentioned that the homes of many Worcestershire midwives, and presumably of some in other counties, are dirty.

Under such circumstances it is not to be expected that women who occupy such houses will be as cleanly as their vocation urgently requires. I do not find that this house inspection in any way overlaps the functions of Sanitary Inspectors, or is in the least resented by them.

On the contrary, should insanitary conditions which the midwives are themselves unable to rectify be met with, I find that the Inspectors readily do what is needed.

With regard to an investigation of a midwife's "mode of practice," as required by Rule 20, this is a very delicate business, and I do not as yet see how it can be undertaken, unless general information obtainable from medical practitioners and Medical Officers of Health be deemed sufficient.

I believe Dr. Barwise has instructed his Inspector to take any opportunity which may offer to visit lying-in women with the midwife, provided assent is given; and I learn from him that many of the *bona-fide* midwives are very glad to receive suggestions from the Inspectors as to their work. But even so I am loath to advise anything of the kind in Worcestershire, at any rate not until local administration of the Act has been on its trial for a longer period than has yet been the case.

As regards the investigation "of charges of malpractice, negligence, or misconduct," required under Section 8 (2) of the Act, neither the Act nor the Rules specifies how information on these points can be obtained.

It seems to me therefore that the Supervising Authority will be unable to move unless hints as to particular cases are given either by medical practitioners, aggrieved relatives of lying-in women, or other persons.

If the police have evidence that the death either of a mother or child is attributed to or associated with a midwife, they should of course communicate with the Coroner and give notice to the Supervising Authority. This at least is the arrangement in Worcestershire. The investigation of charges of malpractice, negligence, or misconduct will probably have to be undertaken by the Medical Officer of the Supervising Authority, either alone or in conjunction with one or more members of the Supervising Authority. At present I believe few such charges have been made, and therefore it seems to me that it would be premature for me to attempt to raise a discussion on methods of procedure.

A case of negligence and incompetency has been reported to my Supervising Authority by a medical man; but it was not proceeded with although each side was legally represented, as it was pointed out that the midwife in question was not enrolled, and consequently did not come under the Act; and also because she gave a written undertaking not to apply for enrolment, nor in future to attend a lying-in woman except under the direction of a qualified medical practitioner. In spite of this undertaking, however, this woman applied to the Central Midwives Board to be enrolled; and as she presented a certificate (Form IX), signed by a medical man, that she had been in practice prior to July 31, 1904, and was "trustworthy, sober, and of good moral character," there is every reason to suppose she would have been successful, had not the Secretary of the Board been informed by my Supervising Authority that this undertaking had been given. Ultimately the Board declined to enroll this woman.

The term "misconduct" in Section 8 (2) of the Act is comprehensive, and includes drunkenness. Consequently I wrote to the Secretary of the Board on November 1, 1904, asking if habitual drinking without conviction for drunkenness could be considered misconduct; to which the Secretary replied that, in his opinion, drunkenness—whether habitual or not—occurring during the execution of a midwife's duty would clearly be misconduct within the meaning of Sub-Section 2 of Section 8 of the Act. He also added that he personally thought that habitual drunkenness at other times, even without a conviction, would also be misconduct, but this possibly might be more open to doubt, and that he did not think any isolated case of drunkenness not occurring in the execution of duty would be held to be misconduct by the courts.

If there is reason to believe that suspension is called for, it is of course all-important that the inquiry should be held without loss of time. To enable this to be done, the Local Supervising Authority should authorize some person or persons to take immediate action; for it would obviously be impracticable to convene a meeting of the Authority in time for this to be done expeditiously. In Worcestershire the chairman and I are empowered to act. If a Supervising Authority should suspend a midwife, that authority is required to at once report the suspension to the Central Midwives Board, after communicating their decision in writing to the midwife concerned.

By Section 8 (4) "the name of any midwife . . . convicted of an offence has to be reported to the Board." To enable this to be done in Worcestershire, arrangements have been made with the Chief Constable by which all "convictions" of midwives will be reported to my Authority. It occurred to me that a definition of the word "offence" was needed; so in May, 1904, I wrote the Secretary of the Board asking "with regard to Section 8 (4) of the Act, does an offence therein mentioned mean an offence under the Act, or does it mean any kind of offence?" And that gentleman, with his usual courtesy, replied that "offence" meant "any conviction under any law."

Section 10 of the Act requires that "every woman shall before holding herself out as a practising midwife, or commencing to practise as a midwife in any area, give notice in writing (Form XII) of her intention to do so to the Local Supervising Authority . . . and shall give a like notice in the month of January in every year thereafter during which she continues to practise in such area." This notice has to be given to the Supervising Authority in whose area such midwife usually resides or carries on her practice, and the like notice has also to be given to every other Supervising Authority in whose area she may practise within 48 hours at the latest after she commences to practise.

So you will see a midwife is only required to give notice of her address in the month of January of each year. Should she change it immediately after doing so she is not required to inform the Supervising Authority of the fact. As I often experience difficulty in locating midwives owing to change of or insufficient addresses, the

Central Board was approached, but I regret to say their Secretary has intimated that "the Board do not contemplate making any regulation imposing on midwives the duty of an immediate notification of changes of address." Their decision is in my opinion regrettable, as Section 8 (6) makes it obligatory for Supervising Authorities "to report at once to the Central Midwives Board the death of any midwife, or any change in the name and address of any midwife in their area, so that the necessary alteration may be made in the Roll."

Section 8 (6) also requires Local Supervising Authorities to "at once" report the deaths of midwives to the Board. The question naturally occurred to me, How can Supervising Authorities get information as to these deaths? Consequently I advised my Authority early in 1904 to approach the Registrar-General with the view of getting the information through Sub-District Registrars. The Registrar-General, having by direction of my Authority been written to, replied (June 21, 1904) that he would "when preparing his official list for 1905, instruct Registrars to furnish to County Councils, certified copies of all entries recording the deaths of midwives in England and Wales, if County Councils so desire, and are prepared to pay the statutory fee (2s. 7d.) for each of such certificates."

The Secretary of the County Councils Association having recently informed the Registrar-General that 18 County Councils desired to be furnished with certified copies of these deaths, the Registrar-General wrote him (Feb. 21, 1905), "That the instructions to Registrars of Births and Deaths (in his official list for 1905) authorizing them to furnish to County and Borough Councils certified copies of entries recording the death of a midwife will be of general application."

Of the 581 enrolled and unenrolled midwives in Worcestershire, only 22 hold recognized diplomas.

Soon after the Act came into force I found a by no means uncommon practice was for some enrolled midwives to advertise themselves as "certificated midwives," even though they held no diploma. This is considered an injustice by those having such a qualification; and I share that opinion. Acting on my advice, therefore, my Supervising Authority asked the Central Board to decide what title an enrolled midwife *with* a diploma, and an enrolled midwife *without* one, can properly claim? To this the Board replied (Dec. 13, 1904): "That the only words a woman is entitled to append to her name are the words 'certified midwife' in full," and this without distinction of the qualifications by virtue of which her name appears on the roll. I presume, however, that there will be no objection to a woman holding the certificate of, *e.g.* the L.O.S. calling herself a certificated midwife, or appending the abbreviated title authorized by the Obstetrical Society. It is clearly improper for a woman who holds only the certificate of the Board to call herself "a certificated midwife."

As only 7 per cent of the Worcestershire midwives have been properly trained, I wish to say a few words with regard to their instruction, the necessity for which is unquestionable. It has, I believe, been found in most counties that numbers of midwives have decided not to apply for enrolment, and intend to give up practice. When the effect of this comes about, I very much fear that some villages and sparsely-populated districts will be badly supplied with midwives; for most of those places cannot afford "parish nurses," and many of the labourers will be unable to pay the fees which will induce trained midwives to settle among them. At the present time a considerable proportion of the working classes choose homely women, however ignorant, to attend their wives, in preference to trained nurses; not only because the payments are less, but also because such men think that the former will more readily undertake household duties and the care of children should there be any. To meet such a dearth of trained midwives, should it occur, and as to which I have not much doubt, Supervising Authorities would in my opinion be well advised to offer facilities for the training of women, as laid down in Section C of the Rules. Local associations supported by voluntary contributions, will also I think have to be started in order to subsidize midwives settling in country places. The Shropshire Higher Education Committee are making special grants of £35 for each woman sent to Plaistow to be trained, and the Glamorganshire County Council are contributing £100 annually towards the expenses, etc., of training midwives at the Medical Department of the University College, Cardiff, where lectures have been given since the early part of October last. The Corporation of Cardiff are also contributing £50 per annum towards the Glamorgan scheme. Possibly also other Supervising Authorities are advancing in the same direction. My Supervising Authority have asked the Worcestershire Higher Education Committee for a modest grant of £100, as the Worcester Nursing Institution have agreed to accept County Council pupils in midwifery upon the following terms, *i.e.* the County Council to pay the sum of £25 for each pupil, and the Institution to take in, board, and lodge the pupils for a period of 4 months each, and instruct them for the Central Midwives Board examination. The pupils are to come provided with a midwifery bag and uniform, which must consist of at least 2 washing dresses and 12 aprons.

Should this grant be obtained, the Worcester Nursing Association will of course endeavour to get their Institution recognized by the

Board as Section C 1 (2) of the Rules requires. Before these women are trained at the ratepayers' expense, it is most probable that each of them will be required to furnish evidence as to character and fitness for the work, and to sign an undertaking to practise in the county as soon as her training is over (and subsequent enrolment obtained) for a period of at least three years, unless prevented by unavoidable circumstances. Should she fail to carry out this undertaking she will have to repay the Supervising Authority the amount paid by them, or a due proportion thereof.

Shortly after I undertook the supervision of midwives, I met with a woman who persisted that although enrolled, she need not conform to the Rules or provide books and appliances, as she acted as a monthly nurse only, under the direction of a doctor. As this point seemed debatable, I wrote the Secretary of the Central Midwives Board (May 28, 1904), asking "Does a woman (duly enrolled) who acts as a monthly nurse and never acts on her own account, come under the Rules of your Board in all respects?" And the reply I received was, "Yes, she is a midwife, see Act, Section 18." This Section reads, "In this Act the term 'midwife' means a woman who is certified under this Act, unless the context otherwise requires."

Now, gentlemen, at last I have done, although there are admittedly other questions connected with the Act which I might have referred to. I feel I have trespassed too long upon your patience, and hope you will not only pardon me for doing so, but also excuse my numerous references to Worcestershire methods of administration. My object has been to elicit what is being done in other places, and having done so to improve the error of my ways.

I wish also to make it quite clear that in venturing to criticize the Rules framed by the Central Midwives Board, my wish has been to refrain from doing so in a carping spirit. No one can possibly be more ready to give information than the Secretary of the Board, and I wish to take this opportunity of stating how much I appreciate his courtesy in giving me valuable help on many occasions.

DISCUSSION.

Dr. Cullingworth (Central Midwives Board) congratulated the reader of the paper on a very valuable contribution to the subject, and the Society upon having elicited that contribution. He was very glad to find that Dr. Fosbroke, on the whole, seemed to approve of the rules and regulations that had been very carefully drawn up by the Central Midwives Board. As to the criticisms, the Privy Council had made a very wise provision that the rules and regulations were to come up for re-consideration at the end of three years from the date of their approval. All criticisms, therefore, from those who were actually engaged in the administration of the Act would be of great value. At the present time everything was new to them and to the County Officers. It was quite impossible for the rules to approach perfection until they saw what the working was in practice. He would say, however, that the suggestions made by Dr. Fosbroke had been carefully noted by the Board, for use when the moment arose for revising the rules. Dr. Fosbroke apologized for the strong local colour in his contribution. He, the speaker, thought that was one of the points of the paper. They wanted to know what was going on. The state of things in the county of Worcester was rather surprising. He should be inclined to consider that the statistics given pointed to an exceptional state of things in Worcester. He should have thought that they would scarcely find such a large proportion of the untrained amongst the practising midwives of the county. He should also regard as exceptional the large percentage of illiterate persons, unable to read or write. It was evident that under such circumstances the work of the County Medical Officers became extremely difficult, and he thought that Dr. Fosbroke was to be congratulated for the work he had already achieved under such unpromising conditions. Much of Dr. Fosbroke's criticism was rather to the effect that they aimed at a standard quite above the majority of those midwives now practising. So far as Worcester was concerned that might be true, but he was sure that Dr. Fosbroke would agree with him that on the whole the Central Midwives Board was right in legislating for the woman they were hoping to see rather than the woman that is. He did not think that the standard was higher than they ought to expect from a woman practising under State supervision. He thought that in these circumstances they were bound to exact from her compliance with a reasonably high standard in their rules and regulations. The actual administration of the Act under such circumstances as obtained in Worcester, as Dr. Fosbroke had said, must be with discretion and common sense. There were several provisions in their rules and regulations which required to be administered with those prime qualities of the County Medical Officer of Health. With reference to the remarks made by Dr. Fosbroke concerning still births, the object of the Central Midwives Board in requiring notification was three-fold. In the first place it was thought that by commencing a system of registration of still births they would be helping forward general legislation on the subject. Secondly, they thought that after a time they would get some very valuable statistics, and thirdly, they had before them the object at which Dr. Fosbroke hinted, namely, discipline. With regard to the large numbers of midwives retiring from practice in Worcester owing to their alarm at the rules and regulations, the same thing was happening in various parts of the country, but they already had on the roll 22,000 midwives, so that he did not think there was much cause for alarm. With regard to sparsely-populated districts, one effect of the postponement of the practising clause of the Midwives Act would be to allow women to practise until 1910, provided they did not put " midwife " on their doors, and it was to be hoped that by that time there would be plenty of trained women to take the place of those who appeared afraid to face the regulations. Some of the medical criticisms had his entire sympathy: for instance, the danger of vaginal injections in unskilled hands, and with regard to the thermometer being useless in the hands of those who cannot read. But surely they did want, from the midwife who was recognized by the State, capacity to recognize danger, and temperature was the earliest guide that something was going wrong with a puerperal patient. He did not think that any woman ought to pass the examination who could not read a thermometer correctly and record what she read.

Dr. J. W. **Hembrough** (Northumberland) called attention to the difficulties he had had in Northumberland. These had arisen chiefly through the legal adviser to the County Council, who said that the Supervising Authority had no legal power to pay an Inspector, or pay for medical advice in difficult cases, or pay any remuneration for information received, as to cases of puerperal fever for instance. He also said that the County Council could not delegate its powers to one or more officials, and therefore they could not delegate their powers to the Midwives Committee, or to the executive officer, or both, with a view to suspending a midwife, if necessary. He, the speaker, did not think that cases of suspension would often arise if proper disinfection could be carried out, but in many districts in Northumberland there was a lack of proper provision; for instance, there were very few steam disinfectors existing. The number of midwives enrolled had been very much smaller than he had anticipated, only about 85 having applied, of whom 55 were certificated and 30 more or less illiterate. A certificated Inspector had been appointed, and part of her duties was to teach these women as far as she could. An arrangement had been made to pay any medical practitioner who sent information of cases of puerperal fever, but no payment had been arranged for medical men called in for difficult cases, and they had been advised that they could not make any such payments. With regard to the bag of appliances, the Midwives Committee seemed to be inclined to allow a great deal of discretion in that respect. They did not feel that the women could afford expensive instruments, and were quite aware that they did not know how to use them. With reference to the question of the thermometer that had been alluded to, he imagined that Dr. Fosbroke only referred to the illiterate midwife, and in that case it would not be advisable. The certificated woman, of course, knew all about it. As to proper instruction, his Council had six women trained each year at Plaistow.

Miss V. E. M. Bennett, M.B., speaking as an Inspector under the Midwives Act, said she had found that in most cases the illiterate women had either a son or a daughter capable of attending to the clerical portion of the rules. As to the use of instruments, the majority of the midwives she had come in contact with had been trained in that direction; the incompetent ones were being taught by her. She had found some difficulty with regard to the regulations as to dress, and still more where a medical practitioner had to be called in. The midwives found that they could not always get aid without first producing the fee, and in the case of many a hard-working midwife it was not always possible for them to find it.

Dr. J. R. Kaye (West Riding), said that after the excellent figures given by Dr. Fosbroke he felt rather diffident about putting his forward. In the West Riding they had 934 midwives, either enrolled or in the process of enrolment. He was somewhat hampered by the educational department of his Council, but intended to ask for a couple of male assistants. Something like 37 per cent of the midwives, so far as he had ascertained at present, were illiterate, unable to read or write. Very few of them owned washable dresses, and he must say that he was generally very much disappointed at the way these women regarded their work. A great many of them were giving up midwifery because they were frightened of the rules and regulations, but since the closing of the list quite a number had sent in their names for enrolment, and they would be excluded. The reason some of these women gave for not applying for enrolment at the proper time was that they had been advised by some doctors that they could act under them. He had written to the General Medical Council calling their attention to these statements, and hoped that such a procedure would be defined as wrong. He had the names of about 1300 midwives. There were 155 women practising in the Riding who had given the Local Supervising Authority no evidence of their intention to practise. As to sparsely-populated districts, he had spoken to a number in his district who had not been enrolled, and it would be a great hardship to them, for some of them had been in practice for ten or fifteen years. No less than six villages had been pointed out to him where there would be no midwives in future because they had been frightened out of it. Two women had actually told him that they had given it up because they were under the impression that if they continued they would be prosecuted. With regard to puerperal fever, in two cases that had been brought to his notice, a doctor declared that neither of them came under that description, and challenged him to define puerperal fever. He thought that they should take a strong line in this direction, and get the midwives to notify any suspicious cases. As to instruments, he quite agreed that it was perfectly absurd to ask these women to do certain things. Some of them had asked him to explain what a thermometer was, and where could they get it. Some did not even know what an enema was, and he had been amazed at their carelessness. He had seen a bag with blood all over the scissors, and all the surroundings of the bag covered with it. Her attention having been drawn to it, she merely said it had been there a very long time. With regard to the disinfection of clothing, he was distinctly of opinion that they should not send it to the Local Authority for that purpose. He required it to be boiled for two hours, and his local Sanitary Officers were quite prepared to certify that it was sufficient. He would like to point out to Dr. Cullingworth that in the form for the midwife to fill up there was no date of birth provided for. As to enrolment, he was sorry to say that his interpretation was different from what had been given in Worcestershire. They had no power over a midwife unless she sent in a notice. He did not think that they would get the County Councils to take up the question of payment of fees to medical men.

Dr. Chas. E. Paget (Northamptonshire) said that he could only speak of small experiences in Northamptonshire, it being less densely populated than those counties they had already heard about. The total number of women who practised midwifery amounted to rather more than 400, but the process of limitation they had adopted had brought them down to 100. They had appointed as Inspector of Midwives a fully-trained nurse from a recognized hospital, who was also a qualified midwife. He had told her to go round and talk to the women, to explain matters to them, and the result had been that three-fourths of them had given up. Since then she had got about and taught them a good deal. Illiterates were coming much more into line, and in the supervision of practice she was much more useful than he was. In one instance she had found a midwife attending a patient without a washable dress, so she promptly bustled her out to get one. So far there had been no friction whatever. They had had to suspend two midwives, and he did not think that he had consulted the Board as to the meaning of suspension. He found that all the lawyers on one's Council had an idea that suspension was a great hardship, and meant some terrible legal process. He explained that he merely wrote a letter suggesting that the midwife should take a holiday, and she was generally glad of the opportunity. He had had no case of malpractice, but every coroner sent a notification whenever there was a midwife in question. They had had five such cases, but the midwife had been cleared in every instance. With regard to the question of providing proper disinfectors, he considered that the infectious hospital was not the proper place for such clothing to be sent to be disinfected. Every District Council ought to have portable disinfectors, and he should not be sorry if one effect of the Midwives Act were to bring pressure upon the District Councils to provide proper disinfectors. He considered that County Councils ought to have power in default of District Councils to see that they were applied for.

Dr. J. B. **Wilkinson**, alluding to the question of payment of medical practitioners, said that it seemed to him that the difficulty might be met by adopting a method which obtained in one or two towns known to him. To those women who were unable to pay at the time, the guardians advanced the fee as a loan; either 10s. 6d. for ordinary labour or £2 2s. in a troublesome case. Sometimes it was a month or two, or even five or six, before it was paid back.

Dr. **Howard Jones** (Newport, Mon.) said it was a very unthankful office for those who endeavoured to administer the Act. In Monmouthshire there was no Medical Officer of Health for the County, but as the British Medical Association had taken up the matter, he hoped that it would soon be remedied. They had, however, moved for the purpose of providing proper training for those midwives who were not illiterate. The County Council contributed £30, and the deficiency was made up by a Ladies' Committee. A teaching centre had been formed, and a number of women enrolled. He knew of a case where the Clerk to the Council had been appointed to administer the Act with a midwife as Inspector; that meant that they had practically to take her advice as to the administration of the Act. In other words, she had to give medical advice where a midwife was suspended. The local medical societies had drawn the attention of the Council to the fact that they should appoint a medical man. They all felt that the County Council ought to appoint a Medical Officer of Health to administer this Act and to attend to sanitary matters as well. He thought the Society should take notice of it. Some remarks had been made about the ignorance of certain midwives as to the use of the thermometer; he knew a woman who actually went to the chemist and asked for a barometer.

Dr. **Tubb Thomas** (Wiltshire) said that his information was identical with that of Dr. Fosbroke. They had 500 women practising midwifery before the Act came into force; now they only had about 100 on the rolls. Unfortunately, he had to inspect the midwives in addition to his other duties, but the difficulty referred to as to washable dresses did not apply to his district. He had also managed to overcome the thermometer difficulty with the illiterate. He treated it as a danger signal, and in the case of women quite unable to read or write he marked a danger point on the thermometer with pencil, and told them that when it rose above that mark they were to send for the doctor. This system he had found to work very well in practice. He was very glad to hear that at the end of three years the rules were to be revised, and he thought that long before that time the Board would have received reports from Medical Officers of Health indicating the difficulties in the administration of the Act.

Dr. **Tew** (Hampshire) called attention to the fact that in those counties where there was no Medical Officer of Health for the County the work had been very much increased. There were seven counties he could mention where the powers had been delegated to the District Councils. That he contended was very unsatisfactory, especially where no officer had been appointed by the County Council. In his own county he found the very greatest difficulty in the administration of the Act. Sanitary Inspectors were put on by the Clerk to do the work, and even Relieving Officers.

Dr. **Charles Sanders** (West Ham) was sorry to introduce the subject of filthy lucre into the administration of the Midwives Act, because they all recognized the value of it. Previous remarks, however, had been very largely directed to obtaining knowledge which they already possessed before the Act came into force. He alluded to the large number of illiterate midwives. He would like to ask the Secretary of the Midwives Board if he could give them any idea as to the financial side of the working of the Act, and also if in his reply he would intimate in what direction the rules of the Board were to be altered in future. He thought there was a slight oversight in Dr. Fosbroke's paper, and that was the omission to commend the Midwives Board for having framed very admirable rules under the circumstances, although there were several defects in the Act. They had done the best they could, and the ultimate result of these rules would be a great improvement in practice. In the Act the expenses were to come from the fees paid by the midwives, but if any fees were to be recovered from the Local Authorities it would probably be in proportion to the midwives practising. He had several midwives in his district who would come under three different Authorities. Some of his midwives had only to go a hundred yards from their doors to get into another district. He had been consulted by them with regard to notification, and he did not think it necessary in each case. He considered that the rules were to be carried out more in the spirit than in the letter.

Dr. **Edward Seaton** (Surrey), referring to the information given to them by Dr. Cullingworth, said that they had been told plainly what were the intentions of the Board with regard to the 1905 class of midwives, but they would like to know a little more with regard to the 1910 class. He assumed that the intention of the Act was to provide for the protection of women and infants, and that all persons practising should undergo supervision.

Dr. **Herbert Jones** considered that the information elicited that evening showed the importance of having a Medical Officer of Health for every County Council. He thought that Dr. Fosbroke had put the matter in rather too optimistic a light. He had referred to a return made in the House of Commons. They were not all full time officers; some of them were merely Medical Officers of Health of the neighbouring districts who made reports. He hoped that the Secretary of the Board would make a mental note of what he had heard that evening, and endeavour to induce his Board to bring pressure to bear upon the County Councils, and in that way induce them to appoint Medical Officers of Health. He was himself aware that in several instances very slight pressure would result in the appointment being made.

Mr. **Duncan** (Secretary of the Central Midwives Board) desired in the first instance to disclaim any sort of medical qualification; his share in the administration of the Act came from the legal side. He was convinced that the Board would welcome the very thoughtful criticism of the rules that had been made by Dr. Fosbroke. The period of validity of the rules expired in 1906, and it was the full intention of the Board to thoroughly revise them. The matter would be taken in hand early next year, and he was sure that the Board would be very glad to consider suggestions made by the Local Supervising Authorities. The effective administration of the Act depended more on the Local Authority than on the wisdom of the Board. From what he had seen, he was convinced that the Act could not be successfully administered where it delegated its powers to the District Councils. He needed no urging as to the desirability of appointing County Medical Officers of Health, because instead of having, say 135 County Councils to deal with, he now had a very much larger number of District Councils to consider, owing to the delegation of duty. The County of Kent, one of the wealthiest counties in the kingdom, was the chief offender in this respect. He was surprised to find Kent so far behind the age. The same thing applied to Hampshire and elsewhere. Monmouthshire had not delegated its duties, but had no Medical Officer of Health. With regard to the Clerk to the Council administering the Act, such a person had neither the time nor the requisite knowledge for such duties, and, moreover, he was usually a solicitor in local practice, and that was also undesirable. Owing to that sort of procedure, a great many women had lost their opportunity of enrolment. In fact, he was convinced that to that very day a large number of women in Kent and Devonshire were unaware of the existence of the Act. He was still receiving applications for enrolment from midwives who appeared to think they were still in time, and particularly from Devonshire. He was under the impression that a great many of the women who had made application for the certificate of the Board had no intention of practising, but desired to frame and hang it up in their best parlours. He had come to the conclusion that in some parts of the country the occupation of a midwife was a healthy one, for he had received an application for enrolment from a woman who stated that she had been in *bona fide* practice since 1842. There was no doubt that a great many of them did intend to retire, and the scarcity would be felt in such sparsely-populated districts as had been mentioned by Dr. Kaye and Dr. Fosbroke. The real point of the criticism seemed to be directed against the Act as passed by Parliament. The Act as passed by private members was extremely defective. Parliament provided the frame-work, but did not fill in the details, although it carefully protected vested interests. According to statistics there were 55,000 midwives in England and Wales. They now had a roll of over 22,000, but were still hearing that the fee of 10s. was prohibitive. No doubt, the rules did not fit in with the condition of things in every case, but that would be mitigated day by day as time went on. As to the discussion, to which he had listened with great interest, there had been a little confusion between the Act and the rules. A gentleman had referred to the question of giving notice in more than one district; that was the fault of the Act. He had been asked to give information as to the financial side of the Act; he knew the financial side of the Board, and that was in a remarkably healthy condition at the present time. As to the future, their source of income would be derived from examination fees that would not pay the cost of the examination. The great blot on the Act was that there was no power on the part of the County Council to pay for the services of medical men called in according to the rules. The Board made the rule, and they had done their best since. They had asked the Privy Council to undertake fresh legislation; they had asked the Local Government Board to issue an order that the notice should operate in the same way as the order to the Relieving Officer for medical advice through the Board of Guardians. The Local Government Board had been considering it for the last six months, and were still considering it. The Central Midwives Board was such a dignified body that they had to approach the department through the Privy Council. With regard to the penal powers of the

Board, he was afraid that it was going to be a very big thing, for complaints were reaching him daily upon all sorts of matters. For instance, he had received a report from Dr. Niven, the Medical Officer of Health for Manchester, in reference to a midwife who also kept a dairy, and had been convicted of selling adulterated milk. The question arose as to whether that was an offence. They had already struck off a woman for keeping a lodging-house without a licence. It should, however, be borne in mind that the Board did not put their penal powers in motion unless a Local Authority had previously investigated the offence. It would save time if in reporting offences to the Board they would on the same occasion state whether they had found a *prima facie* case. Dr. Seaton asked about the women of 1910, and how the Board proposed to deal with them. Women who were not certified were not midwives. The Act said they were entitled to practise, but they would find it very difficult, and would very likely come into conflict with the Local Supervising Authority. He desired to thank Dr. Fosbroke for his paper and for the complimentary references to himself, which were quite undeserved.

Dr. **Kaye** asked if they were to understand that in the case of a formal complaint being sent in the Board would not take action on it.

Mr. **Duncan** did not desire to go so far as that. What he wished to make clear was that if a *prima facie* case had been found it would save time.

Dr. J. F. J. **Sykes**, alluding to the reference by Mr. Duncan to the conviction of a midwife for selling adulterated milk, said that he hoped the Central Board would take such cases into consideration. It was the duty of the midwife to advise the mother how to feed the child. The question of adulteration was a most important point. He considered that there should be means of ascertaining the number of midwives and the proportion of illiterates in each supervising district, and he presumed the Board would undertake that duty at some time or other. The only figures he could get were with regard to illiterates, and they seemed to vary enormously. He had been trying to get at the system of disinfection recommended, but he thought that it all resolved itself into a question of proper supervision, and unless the Local Authority undertook the matter they would get no disinfection at all. With regard to the definition of puerperal fever, about eight years ago a case had been sent to the Central Criminal Court in which a midwife who had attended a number of cases of puerperal fever was concerned. Three of the cases had died after she had been warned not to attend. According to the medical evidence then given, it was impossible to distinguish one kind of puerperal fever from any other. The jury did not agree. It was the first case of its kind, and it attracted a great deal of public attention. It was considered a very important point at the time, because if it were not possible to distinguish between one kind of inflammation during the puerperium and another, it would be difficult to maintain a prosecution, in spite of the fact that the College of Surgeons did give a definition. He did not think, however, that such definition would hold good in a court of law. He thought the Board ought to pay attention to this matter, and know exactly what they were dealing with when they had a case of neglect before them.

Dr. **Fosbroke**, in replying, said they had been so indulgent in their remarks upon his paper that there was not much that required answering. It afforded him great gratification to find that Dr. Cullingworth agreed in some respects with the mild criticism he had offered. He quite agreed that the rules were good for trained midwives, but the great majority were untrained women and illiterates, and the point was that he hoped that some discretionary power would be given to the Local Supervising Authority. He thought, however, it was a great pity to have rules which they did not intend to carry out. If midwives once got to think that they were not enforcing certain of the regulations, they would at once believe that none of them would be carried into effect. With regard to thermometers, he did not suggest that a trained midwife could not read one; he knew she could do so. His remarks referred entirely to the illiterates. The point raised by Dr. Seaton as to what would happen after 1910 was a difficult one. He assumed there would be discretionary power.

The proceedings terminated with a hearty vote of thanks to Dr. Fosbroke, which was carried by acclamation.

REWARD FOR SAVING LIFE.—The Royal Humane Society has awarded its medal for bravery in saving life to Arthur F. Foster, M.R.C.S., Deputy Health Officer, Hong-kong, for saving two native children from the harbour there, on December 28th.

EMISSION OF SMOKE FROM CHIMNEYS.—"Reports on the laws in force in certain foreign countries" (Parliamentary paper, 2347). The reports are in reply to a circular sent by Lord Lansdowne in May last to his Majesty's representatives in Paris, Berlin, Vienna, Budapest, Rome, Brussels, The Hague, Berne, Washington, Munich, and Coburg, requesting them to furnish the Secretary of State for Foreign Affairs with a report respecting the laws in force in the countries to which they are accredited "for the regulation, restriction, and the prevention of the emission of smoke from factories, and other business premises, and from private dwelling-houses, with such extracts from those laws as may be needed to explain their operation." The countries from which reports have been received are Austria, Bavaria, Belgium, France, Germany, Hungary, Italy, Netherlands, Saxe-Coburg and Gotha, Saxony, Switzerland, the United States, and Wurtemburg. The majority of the reports from the Continent are to the effect that there are no separate or special laws in force for the regulation, restriction, or prevention of the emission of smoke, and that the subject is left as a rule to police or municipal regulation. Sir Mortimer Durand's despatch, which includes reports from our Consular officers in the States of New York, Pennsylvania, Massachusetts, and Illinois, says that in New York State the emission of smoke from buildings comes under the provision of the Public Health Law, as constituting a nuisance. There is no general legislation in the State of Pennsylvania on the subject of smoke abatement, but the larger cities and other municipalities have in some cases adopted local regulations controlling the matter. The towns of Erie, Reading, and Lancaster have no restricting or regulating ordinances whatever. At Pittsburg there is a similar absence of regulations. The mayor states that an ordinance does exist, but that the Courts have declared it to be unconstitutional, and that no further action has since been taken. At Philadelphia there is an "ordinance to regulate the smoke from chimneys, stacks, flues, or open spaces within the city." This ordinance provides a colour scale for the measurement of the degree and darkness of smoke, making it unlawful to permit the escape of smoke of certain degrees of darkness, and fixes a penalty for the violations of its regulations.

THE MIDWIVES ACT, 1902.*

OPERATION IN THE ADMINISTRATIVE COUNTY OF LANCASTER.

By EDWARD SERGEANT, L.R.C.P., M.R.C.S., L.S.Sc.
County Medical Officer of Health for Lancashire.

As you are aware, under the Midwives Act, March 31st, 1905, was the last day on which claims could be made for enrolment by women holding certain specified certificates in midwifery, or who had been in *bonâ fide* practice as midwives for one year previous to the passing of the Act (July 31st, 1902). No uncertified woman can now use the name or title of midwife (either alone or in combination with any other word or words), or imply that she is certified under the Act, "or is a person specially qualified to practise midwifery, or is recognized by law as a midwife." Whether she can continue to attend persons in confinement is doubtful, but there does not seem to be any direct prohibition of such a course, although after the expiration of five years of grace, Section (2) provides that from and after the first day of April, 1910, "no woman shall habitually and for gain attend women in childbirth otherwise than under the direction of a qualified medical practitioner unless she be certified under the Act." Appreciating the importance of certification to persons who could claim such privilege either by having passed an examination or having been in *bonâ fide* practice during the specified period required by the Act, every effort has been made in the Administrative County of Lancaster, by advertisement in the newspapers, and by carefully conducted local inquiries, to give every possible information to those concerned respecting the mode of certification and other matters affecting persons practising as midwives. In addition, the County Council greatly assisted the work of enrolment by providing the various forms, and seeing that they were properly filled up and duly forwarded to the Central Midwives Board. Since the Lancashire County Council in November, 1903, delegated its powers as the Local Supervising Authority under the Act to a special Committee, composed of the medical practitioners on the Council, with the addition of one member from each of the four County Quarter Sessional Divisions, 1,107 applications have been made for certification, of which 108 applied direct to the Central Midwives Board, and the remainder to the County Authority. Thirty-five of the applicants resided in districts which have since ceased to form part of the Administrative County, and their names have been transmitted to the Medical Officers of Health of the County Boroughs concerned.

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* Read at the Meeting of the North-Western Branch of the Society of Medical Officers of Health, on April 28th, 1905.

I now place before you a tabular statement giving the distribution of the 1,072 midwives who have applied from the 131 Lancashire County Districts to be certified; three applications were refused by the Central Midwives Board on the grounds of evidence as to character supplied by me, and 36 either withdrew or did not complete their applications, leaving a total of 1,033 midwives under the supervision of the County Council. Of these, 295 practise in 19 non-County Boroughs, 586 in 93 Urban Districts, and 152 in 19 Rural Districts; the proportion of midwives to population being 1 to 2,000 in the Boroughs, 1 to 1,548 in Urban Districts, and 1 to 1,587 in the Rural Districts. Included in the above figures there are 13 certified midwives resident outside the Administrative County who have given notice of their intention to practise within the County Council area, viz., Wigan 3, Oldham 3, Bolton 2, Liverpool 2, Rochdale 1, Barrow-in-Furness 1, and the County of Chester 1.

Of the 1,033 midwives now under supervision, 152 hold the following certificates: Obstetrical Society of London, 55; Coombe Lying-in Hospital and Guinness's Dispensary, Dublin, 2; Rotunda Hospital for the relief of the poor lying-in women of Dublin, 1; Queen Charlotte's Lying-in Hospital, 1; Liverpool Ladies' Charity and Lying-in Hospital, 37; Manchester Southern and Maternity Hospital, 13; St. Mary's Hospital, Manchester, 43; while 881 have claimed to be certified by reason of having been in *bonâ fide* practice twelve months prior to the passing of the Act. The fact that 211, or 22 per cent, of the persons enrolled as midwives cannot sign their own names indicates the character of those who have hitherto been responsible for carrying out the work of so much importance to the community, and there is reason to believe that much difficulty will be experienced in getting these illiterates to observe the rules framed by the Central Midwives Board as to the keeping of (*a*) case books, (*b*) statement of particulars when a medical practitioner is sent for under certain specified conditions, (*c*) record of administering any drug, with the time and cause of its administration; or in regard to the notification of death of mother or child which may have taken place before the attendance of a registered medical practitioner; still births; puerperal fever and other infectious diseases. Owing to ignorance of the use of a thermometer, a further difficulty will arise in observing rule 17 (c) 1 (5), which requires that a registered medical practitioner must be sent for on the occurrence in a lying-in woman of a temperature of 100·4° Fahr., accompanied with a quickening of the pulse, for more than twenty-four hours. In reply to my communication on this point the Central Midwives Board suggest that midwives be informed as to the use of a thermometer, a proceeding which will be attended with little beneficial result in many cases.

Now that the work of enrolment has been completed, it behoves the Committee of the County Council as Local Supervising Authority to carry out the administrative duties imposed on them by the Midwives Act, which I may say were not delegated as they could have been, if they so desired, to District Councils in the County area. By retaining the powers under the Act it was thought that there would be more likelihood of uniformity and efficiency of administration being secured, as well as economy and complete control over expenditure. By Section 8 the duties imposed on the Local Supervising Authority are of a comprehensive and important character, and comprise :—

1. General supervision of midwives.
2. Investigation of charges of malpractice, negligence, or misconduct.
3. Suspension of midwives in order to prevent the spread of infection, etc.

In addition a correct roll of midwives has to be kept and submitted to the Central Midwives Board in January of each year, and the Board have to be promptly informed of the death of any midwife, or any change in the name or address of any midwife within their area, for which unfortunately no provision has been made. A difficulty experienced in obtaining information of deaths of midwives has been removed by the Registrar-General, who has issued his authority " for local Registrars of Births and Deaths to furnish to County and County Borough Councils certified copies of entries of deaths of midwives on payment of the fee of 2s. 7d. for each such certificate."

The directions to midwives drawn up by the Central Midwives Board with the approval of the Privy Council, are of a far-reaching character, and if reasonably carried out will act beneficially in limiting puerperal infection of the uterus and the other dangers inherent to childbirth. They refer to :—

The personal cleanliness of the midwife: she must wear a dress of washable material, and over it a clean washable apron.

She must take with her to a confinement :—

(*a*). "An appliance for giving vaginal injections ; an appliance for giving enemata ; a catheter ; a pair of scissors ; a clinical thermometer ; and a nail brush."

(*b*). " An efficient antiseptic for disinfecting the hands, etc."

(*c*). " An antiseptic for douching in special cases."

(*d*). " An antiseptic lubricant for smearing the fingers, catheters, douche nozzles, and enema nozzles before they touch the patient."

There are also important duties placed on midwives as to their conduct to women during labour and the lying-in stage, and in respect of the child born apparently dead, etc. The general directions prescribe the conditions under which she must send for a registered medical practitioner, and a midwife must decline to attend alone "in all cases of abortion, of illness of patient or child, or of any abnormality occurring during pregnancy, labour, or lying-in."

In order to provide for the proper supervision of midwives, and for a due observance of the rules and regulations framed under the Act, Lancashire and the following Counties, Durham, Glamorgan, Shropshire, Staffordshire, Norfolk, Northamptonshire, Worcestershire, Warwickshire, etc., have appointed female Inspectors to act under the direction of their Medical Officers; the Inspector appointed in this County being a trained nurse certificated in midwifery, while in Durham, Worcestershire, and partly in Staffordshire the work is entrusted to lady doctors. The question of educating the *bonâ fide* midwives who have been placed on the roll is rapidly coming to the fore, and already courses of lectures for their special benefit have been initiated in several counties. The training and supply of midwives has also occupied attention; for instance, the Glamorgan County Council has decided to contribute annually the sum of £100 to the medical department of the University College, Cardiff, towards the establishment of a training centre for persons desirous of becoming midwives, twenty-one free studentships being awarded annually. A sum of £50 is also contributed annually by the Corporation of Cardiff for the same purpose. The Shropshire County Council has also spent £500 towards the teaching of midwifery nursing, while Staffordshire and Northumberland County Councils are contemplating a similar expenditure. The character of the midwives now in practice, and the value of the supervision initiated in this County, will be more correctly estimated by the following quotation extracted from the last quarterly report of the Inspector (Miss Wright):—

"Of the 332 midwives interviewed, 84 have provided themselves with a case-book and bag of appliances, 78 others had an incomplete set of appliances, 149 had not obtained the case-book, and 112 did not carry the required appliances. I find that at the present time very few midwives keep their case-books in a satisfactory manner, and in many instances the entries indicate a lack of knowledge of the work they undertake to perform.

"The majority of the midwives are clean in their person, and have respectable homes, but 27 women apparently do not appreciate the importance of carrying out Rule 1, which states that the midwife must be scrupulously clean in every way. I impressed upon these persons the necessity of cleanliness, and pointed out the serious danger to their patients by such neglect.

"Rule 15 states that no midwife shall undertake the duty of laying-out the dead, and I have been asked by many of the midwives whether they can do this work when not attending midwifery cases, as in several instances they depend for a living more upon this class of work than upon midwifery."

I may state that I have written to the Central Midwives Board in regard to the practice of certain midwives who also undertake the duty of laying-out the dead, one case being mentioned where a person had on her door-plate "midwife and undertaker." The Board inform me that such a practice is clearly against the rules, and should be dealt with at once by the Local Supervising Authority. Rule 15 was specially inserted to meet such a case, "which the Board understood on the information of one of its members is by no means unknown in Lancashire."

In three cases I have had occasion to call the attention of the Central Midwives Board to the drunken habits of women applying to be placed on the Roll by virtue of having been in *bonâ fide* practice, and all were rejected. On only one occasion have I had to report to the Central Midwives Board a woman for malpractice. In this case the midwife came to the conclusion that a newly-born child was tongue-tied, and attempted to cut the frænum with a small pair of ordinary scissors, but unfortunately cut the tip of the tongue, causing hæmorrhage from which the child died in the course of forty-eight hours, a doctor being called in just before death. The Board taking into consideration "all the facts of the case, and noting that the Local Supervising Authority had requested the Board to exercise leniency if possible," severely censured the midwife for her misconduct in attempting to perform a surgical operation, and cautioned her against any future action of this kind. Section 8 (4) of the Act requires the Local Supervising Authority to report at once to the Board the name of any midwife practising in their area convicted of an offence; as there is no special means provided for obtaining this information I have been able to obtain the assistance of the County Police in this matter.

From a public health point of view the most important rule devised by the Board is the one relating to puerperal fever: "Whenever a midwife has been in attendance upon a patient suffering from puerperal fever, or from any other illness supposed to be infectious, she must disinfect herself and all her instruments and other appliances to the satisfaction of the local sanitary authority, and must have her clothing thoroughly disinfected before going to another labour. Unless otherwise directed by the Local Supervising Authority, all washable clothing should be boiled, and other clothing should be sent to be stoved (by the local Sanitary Authority), and then exposed freely to the open air for several days." This seems to be the only duty imposed by the Central Midwives Board upon local Sanitary Authorities, and it is essential that each district should be provided with apparatus for ensuring satisfactory disinfection. Further, on receiving notification of the outbreak of puerperal fever it is well known to be the duty of the local Medical Officer of Health under Article 18 (6) of the General Order of the Local Government Board relating to his duties, to visit without delay the spot where the outbreak has occurred, and make inquiries with the object of taking such measures for the prevention of disease as he is legally authorized to take. In fact under the new Act he continues to do what he has hitherto done, but he may now be further strengthened by the Local Supervising Authority, who have power under Section 8 (3) of the Act to suspend a midwife in case she contravenes the directions for the use of disinfectants, or for the employment of proper safeguards against the spread of infection.

Although it is the duty of the midwife to notify the occurrence of puerperal fever and other infectious diseases in her practice, it is the medical practitioner called in who has to diagnose the case, and it is his duty to notify to the local authority, and I can quite see that there may be some delay in the midwife ascertaining the nature of the disease, and so notifying the case to the proper quarter. In order to secure prompt and reliable information of the occurrence of puerperal fever in the constituent districts of the county, and concerning the action taken by the local sanitary authorities as to disinfection and other precautionary measures, it will be necessary for the County Council to be in touch with the district Medical Officers of Health. On this point I have the support of many of the County Medical Officers of Health. Dr. Paget (Northamptonshire), in a recent paper on the control of midwives, gives expression to the views held: the Medical Officer of Health, he says, "has to report to his District Council on the occurrence of notifiable infectious diseases coming to his knowledge within his district; he is, however, under no obligation to report similarly to the County Council. Nevertheless he is the best person to supply the information without delay, and to recompense him in a slight degree for such a service to the Local Supervising Authority, the Derbyshire, Northamptonshire—and possibly other County Councils—have already arranged to pay half a guinea for a report by a District Medical Officer of Health on the circumstances of each case of puerperal fever notified to him as occurring in the practice of midwives within his district."

A question of some importance to the medical profession arises out of Rule 17, which requires a midwife to *advise* that a registered medical practitioner be sent for under certain conditions already mentioned. One would think that ordinarily the medical man would look to his patient for payment of his fee, as hitherto, but the difficulty arises when the patient cannot pay. Should the Poor-law Guardians give increased facilities for their Medical Officer to be çalled in under such circumstances ? or, should the Local Supervising Authority pay ? The latter view is taken in some districts, and I may mention that the Liverpool City Council has decided, " that in cases of urgency in which medical practitioners have been called in by certificated midwives, as contemplated by Rule 17 of the Rules issued by the Central Midwives Board, pursuant to Section 3, Sub-section 1 of the Midwives Act, 1902, a fee not exceeding one guinea be paid, on the certificate of the Medical Officer of Health, to each such medical practitioner, in the event of his failing to obtain payment of his fee from the patient or from the Poor-law Authority." The Council of the City of Manchester propose to adopt a similar course, and the Manchester Medical Guild has been in communication with the Local Government Board as to whether Local Authorities can legally pay the fees for such medical attendance. It has been pointed out to me that the reply received states that such payments might be made under Section 133 of the Public Health Act, 1875. This section, however, enables only urban and rural sanitary authorities, which are " local authorities " under the Act, to provide the necessary medical help, whilst County Councils, upon whom devolves very largely the administration of the Midwives Act, have no such powers, and the Secretary of the Central Midwives Board informed me (December 8th, 1904) that he is afraid the medical practitioner called in under the provisions of Section E, Rule 17, " must take his chance of payment by his patient, as unfortunately County Councils have at present no power to pay these fees." I believe, however, that the Central Midwives Board favour the payment, under statutory provisions, of a medical practitioner when called in by the midwife, and have forwarded a resolution to this effect to the Privy Council. If a clause as foreshadowed is inserted in an Amending Act it will be a very serious thing for County Councils. In this County alone some 50,000 births take place annually, and it is computed that over one-half are attended by midwives; therefore it may safely be assumed that a considerable expense would be thrown on the County Council.

One other matter, which relates to still-births, and the action to be taken on their notification, claims our consideration. For the first time an attempt has been made to subject still-births to inquiry. As you are aware, there is no registration of still-births in the United

Kingdom, and the only reference to them is under Section 18 of the Registration of Births and Deaths Act, 1874, where previous to burial "a person who has control over or ordinarily buries bodies in any burial ground" must have delivered to him (*a*) a written certificate from a medical practitioner; (*b*) a declaration signed by some person who would if the child had been born alive have been required by the Act to give information concerning the birth; or (*c*) in case of inquest, an order of the Coroner. *Nursing Notes* for July, 1904, states that the registration of still-births is compulsory in France since 1806, Germany 1875, Austria 1870, Italy 1865, Norway 1797, Sweden 1860, and Denmark 1871. Still-births are registered as deaths in France, Spain, Germany and Hungary; they are registered as births in Italy and Sweden; they are registered as both births and deaths in Austria, etc. They are registered separately from births and deaths in Norway, and as still-births in the column of deaths in Denmark. A letter received (December 23rd, 1904) from the Central Midwives Board states that the matter of still-births is "one which is entirely within the discretion and competence of the Local Supervising Authority, who will no doubt investigate the circumstances of each case, if they consider it necessary." In a large number of cases the notification of still-births will not be received by the Local Supervising Authority until after burial, when profitable investigation would be rendered somewhat difficult. Action could in my opinion be more advantageously taken in each district by the local Medical Officer of Health, and I would also suggest that all still-births, whether occurring in the practice of a medical practitioner or midwife, be made compulsorily notifiable both to the District Council and Local Supervising Authority.

In concluding my remarks I must express high approval of the aims of the Midwives Act, for I believe it will undoubtedly secure what it is intended to do, namely, "the better training of midwives," and consequently their increased usefulness.

DISCUSSION.

Dr. **Wheatley** agreed with most of what Dr. Sergeant had enunciated. He regretted the use of the term "washable," as referring to dresses in the Midwives Board Regulations, for many kinds of clothes (for example, woollen materials) could be called washable, but at the same time they were not sterilizable by ordinary washing. The Central Midwives Board really meant print or cotton dresses. As to the regulation prohibiting midwives from laying-out the dead, or prohibiting persons who laid out the dead from acting as midwives, he looked upon it as impracticable, for in such rural districts as he knew, if they insisted upon this, they would have no midwives left. He had hoped that the regulation relating to the disinfection of clothes would be of some use in helping him to get steam disinfectors fixed in some of his districts; but it appeared to be of no use to rely upon the Act for that purpose, for if a midwife washed the clothes and boiled them, there would be nothing left for the steam disinfector to do. His County Council, in cases of puerperal fever, asked medical practitioners to send them a copy of their notification certificate, and for this they paid the Notification Act fee. He was able to visit all puerperal fever cases himself, and was glad that he was able to do this. The vexed question of payment of medical men, when called in by a midwife, he thought might be safely left to the profession, who were surely able to take care of themselves. He was of opinion that this expense should be recovered from the patients, or else great abuse would result. For example, they might have midwives advertising that if they were engaged by the patient, they would call in a medical man, and leave the Supervising Authority, or any other Authority, to pay for him—a most undesirable prospect.

Dr. W. **Berry** spoke both as a Medical Officer of Health and as a private practitioner of considerable experience. He was of opinion that the Board's Regulations for Midwives were really more stringent than most medical men set themselves to carry out. The dissemination of puerperal fever infection could be comparatively easily checked, because its sources were limited and well-known. He had been greatly astonished at the number of illiterate women who acted as midwives, and who had been brought to light by the preliminary operation of the Act. The Act and the Regulations would have to be carried out with great discretion, because even now midwives were assuming duties which they were never intended to perform, and they were assuming these, just because they happened to be registered by the Midwives Board. As for medical attendance, if that was requested, he would let them go to the relieving officer, and get an order for medical attendance, or else call in their own medical man from the start. He should certainly never agree to the principle of a Town Council paying for medical aid under such circumstances, for the simple reason that it was possible for midwives to be subsidized by black sheep in the profession, for purposes of calling them in to assist medically at confinements. He thought the regulations fairly good, but at the same time he thought it was apparent, on the face of them, that they were the work of professors of obstetrics in universities, who were not intimately acquainted with general practice.

Dr. **Greenwood** thought that the Central Midwives Board should pay greater attention to reports of Medical Officers of Health on matters which came to their notice in connection with the Act. He had reported one case to the Board, of a woman who was absolutely unfit, in his opinion, to be registered, but the woman was registered all the same. He had known a midwife to use the wrong end of a clinical thermometer. It was fortunate that midwives could only *advise* the calling in of medical aid according to the Act, and he thought attention should be paid to the proper interpretation of that word; many people thought that the midwife could, on her own initiative, call in medical assistance. He drew attention to the want of attention in many places as to the management of the puerperium. In Blackburn, for instance, there was a very old custom, whereby parturient women got up on the third day, stayed up until the ninth day, and then stopped in bed the tenth day, getting up again afterwards; a literal interpretation of a badly-worded rule.

Dr. **Chronnell** also alluded to the practice mentioned by Dr. Greenwood as being customary in his district also. He was doubtful as to the power of suspension, as to where the Medical Officer's action began and ended under Section 8 (3) of the Act. In his district, the County Council was the Local Supervising Authority, and he took it that it was their duty to do the suspension in requisite cases, and his duty, as the local Medical Officer of Health, merely to report the facts to them. He would personally like to get all the midwives in his district together, and give them a simple lecture or two, on what they had to do, and how to do it, for he found that many of the regulations were carried out in a perfectly meaningless way; for example, he knew several midwives who religiously carried nail brushes, as part of their equipment, but never dreamt of using them.

Dr. **Margaret M. Smith**, who spoke by the courtesy of the meeting, gave a detailed description of the work which had been done up to the present in Manchester, and distributed pamphlets issued by the Midwives Supervising Committee in Manchester, giving plain and pointed directions concerning all the matters with which midwives had to do. She found that the most useful part of her work was to remain in her office at the Town Hall from 9 to 11 o'clock every Saturday morning, in order to interview midwives and be consulted by them on points connected with the working of the Act.

Dr. J. **Chadwick** complimented Dr. Sergeant on the manner in which he had organized the working of the Act. An important part of their work would be to instruct the illiterate and backward midwives, so that the supply of qualified ones should be kept up. The Education Committee of the Lancashire C.C. were to be asked to provide midwives' classes, similar to those on ambulance, cookery, sick-nursing, etc., which were in vogue at present, in order to meet the requirements of those who desired to qualify as midwives. He had observed a great improvement in the habits and the conduct of midwives since the Act came into force. He had considerable sympathy with general practitioners, and he knew that they were watching the operation of the Act with a very jealous eye. Those who were members of Local Supervising Authorities must make it their honest endeavour to work amicably and reasonably with general practitioners.

Dr. **Garstang** was more than surprised that no one had apparently taken into account the claims of the medical profession in connection with this Act. On the part of the general practitioners he dissented most strongly from certain remarks which had been passed about general practitioners. There was a good old Lancashire proverb which said, "Never do owt for nowt, but if tha does, do it for thissen." That, he thought, should be the motto of general practitioners, in dealing with the Midwives Act. The Act placed no responsibility on the general practitioner, there was no duty imposed to go when sent for by a midwife, and personally he would not attend such a call for any fee he could be given. The great gap in the Act was that there was no provision for payment of general practitioners, when called in such a way—a most unreasonable and unwarrantable omission. He was surprised that no speaker had referred to the Cheshire County Council arrangement, which, in his opinion, was one of the most practicable he had yet heard of. In their scheme, the County Council retained power as the Local Supervising Authority, making the local Medical Officer of Health executive officer under the Act, and responsible in his own district for all work of inquiry, precaution, etc. He was glad that the rules were stringent even to the point of being almost impossible, or not understandable by the midwife. From the point of view of medical practitioners, the Act was an accursed one, and had done irreparable damage to the profession.

Dr. **Meredith Young** alluded to the necessity for County Councils and others providing proper means of education and practical training for persons desirous of becoming midwives. At the end of another five years, unless something were done on these lines, the supply of midwives would not be sufficient to meet the demand. As regards payment for medical aid, when called for by the midwife, the difficulty might be made to vanish by the operation of Section 133 of the Public Health Act, 1875, under which Section any Local Authority, with the sanction of the Local Government Board, could provide temporary medical assistance to the poorer inhabitants of their district. He drew attention to the use of the words, "any Local Authority," and he also drew attention to a recent utterance of the Local Government Board, in which, in reply to an inquiry, they had suggested that this Section might meet the difficulty created by the Midwives Act. One of the speakers had alluded to his practice of suspending midwives who had attended cases of puerperal fever for a period of a month or six weeks. Personally, he failed to see any object whatever in such course of action. His own practice was to send the midwife to the disinfecting station, where she received a bath, under the supervision of a qualified nurse, who was instructed to look carefully over her, and find out that she was not suffering from any abscesses, ulcers, or other discharging lesions; her clothing was steam-disinfected, her bag was thoroughly overhauled, and any dirty or infected articles either disinfected or destroyed; her dwelling was visited, in order to make sure that no infection could originate there, and after that she was allowed to continue her work. Where did the utility of their steam-disinfection and other methods come in, if, after all this performance, the midwife had still to be suspended from practice for a number of weeks? To his mind such a practice was a relic of bygone ages, and should be abandoned when measures such as he had specified could be carried out. He had recently issued some instructions in plain language, to midwives, on the subject of disinfection, etc., and copies of these he handed round to the members.

Dr. SERGEANT, in reply, thanked the meeting for the reception of his paper. No matter what objection to the Act was taken by general practitioners—and he could not help thinking that Dr. Garstang had overstated those objections, and had been, perhaps, carried away by feeling—he firmly believed that the Act would be ultimately of great benefit, not only to the women and children concerned, but to general medical practitioners also. It was frequently the case that individual interests suffer a little at first, but he honestly felt that it would not be for long in this case. A collusion between midwives and medical men was a danger which he did not expect would grow to anything very serious, and he thought that a system of check could be adopted as experience grew. He had known similar fears to those expressed by Dr. Garstang brought forward with reference to the Notification Act, which was now so well established in the country. He had known a medical man to hold out his right hand and say that he would rather have it burnt off than sign a notification certificate; and yet no one could doubt but that the Notification Act had been a boon, not only to the public, but to medical practitioners. He doubted Dr. Young's interpretation of the term "Local Authority" in the Public Health Act, as enabling County Councils to provide medical assistance under the Midwives Act. In county areas they were in the hands of Local Government Board auditors, and had not the same command over their expenditure as the county boroughs. It was fortunate that Dr. Wheatley was able to make inquiries in puerperal fever cases himself, but other County Medical Officers of larger populations would find it a great difficulty to do this, if not an impossibility. He was in agreement with the suggestion that teaching centres should be established for the instruction of midwives, but he thought that much more good would be effected by putting these in the hands of additional women inspectors rather than in the hands of professors of obstetrics, whose lectures perhaps would not be so well understood by the illiterate women who came for instruction.

THE BACTERIOLOGICAL EXAMINATION OF WATER.

Interim Report.

Prepared by JOHN C. THRESH, M.D., etc., and W. S. STRACHAN, B. Sc. (Lond.),
for the Committee appointed by the Home Counties Branch of the Medical Officers of Health Society.

THE investigations described in this report were carried out with the view of extending the observations made by Drs. Thresh and Sowden and recorded in *Public Health* of May, 1904, and in order to aid in the correct interpretation of the results obtained upon the bacteriological examination of waters derived from wells of doubtful character. The paper above referred to shows that when one part of crude sewage has been added to one million parts of water, the *Bacillus coli communis* and the *Bacillus enteritidis sporogenes* can be detected in the *recently* polluted water. The question to be decided by the present investigations was whether such pollution could be detected if it were not of very recent date.

The experiments were conducted in the Public Health Laboratories at the London Hospital Medical College, and the water used was that drawn from the tap in the laboratory, supplied from the East London works. As it may ultimately prove that the character of the water may have some influence upon the results, the samples used were examined (*a*) by the ordinary methods; and (*b*) to ascertain the quantity and quality of the saline constituents, and the results are here recorded. A sample of crude sewage from a different source was used in each series of experiments, and these samples were also examined chemically and bacteriologically.

After the addition of the sewage to the water, the mixture was carefully kept in the dark, samples being withdrawn at recorded intervals and submitted to bacteriological examination. This examination comprised the enumeration of the bacteria per cc., counting the colonies on the second, third, and fourth days where possible, search for the presence of the *B. coli communis* in varying quantities of the water, and the application of the milk test for the reaction of the *B. enteritidis sporogenes*. The methods adopted are those described in the paper by Drs. Thresh and Sowden, with the exception that no attempt was made to distinguish between an organism capable of liquefying gelatin and the true *B. coli*, which does not possess this power. Our experience is, that using the bile salt media in the manner advocated, the members of the *proteus* group are practically eliminated, and in every instance in which such an organism has been found in a polluted water we have found it associated with the true *B. coli*. For this reason the nature of the growth on gelatin has not been ascertained.*

First Series of Experimemts.

Water used.—Tap water at the London Hospital, after passing through a bacterial filter.

Sewage used.—Crude sewage from Watford main sewer outfall.

Proportions.—1 part of crude sewage to 100,000 parts of water. Mixture kept in the dark.

ANALYSIS OF THE TAP WATER USED.

Ca. 9·8	Mg. ·5	Na. 1·4	CO_3. 12·4	SO_4. 4·8	CC. 2·1	NO_3. 1·0	Probable Constituents.	Parts per 100,000.
8·3	—	—	12·4	—	—	—	Calcinm carbonate ...	20·7
1·5	—	—	—	3·6	—	—	Calcium sulphate ...	5·1
—	·3	—	—	1·2	—	—	Magnesium sulphate ...	1·5
—	·2	—	—	—	·6	—	Magnesium chloride ...	·8
—	—	1·0	—	—	1·5	—	Sodium chloride ...	2·5
—	—	·4	—	—	—	1·0	Sodium nitrate	1·4
							Total solids by addition	32·0
							Total solids dried at 180° C.	33·7

Free Ammonia 0·000, Organic Ammonia 0·0084, Oxygen absorbed 0·080.
Colonies of bacteria from 1 cc. In 2 days 2, in 3 days 4, in 4 days 9. No *B. coli* in 36 cc. nor *B. enteritidis sporogenes* in 500 cc.

Analysis of the Sewage used.

	Parts per 100,000
Chlorine	11·1
Free Ammonia	14·40
Organic ammonia	·80
Oxygen absorbed in 3 hours at 98° F.	5·14

Turbidity 25°. Odour, strongly urinous.

No. of colonies per cc.	2 days	700,000
”	3 ”	900,000
”	4 ”	1,800,000

The *B. coli communis* could be detected in $\frac{1}{100000}$ of a cc.

The *B. enteritidis sporogenes* reaction was obtained with $\frac{1}{1000}$ of a cc. Table I epitomizes the results of our experiments with this polluted water, the details of which are recorded in Table II.

These results show that with such a dilution the *B. coli* and the spores of the *B. enteritidis sporogenes* rapidly decrease in number, and that on the fourteenth day the former could not be detected in 36 cc. of the water, nor the latter in 500 cc. On the other hand, the number of colonies growing on gelatin plates increased up to the ninth day, if not afterwards. In this case, therefore, the evidences of pollution, as shown by the tests for specific organisms, were not definite on the sixth day, but the presence of the *B. coli* and of such an excessive number of bacteria capable of liquefying the gelatin, was sufficient to condemn the water for more than 9 days. After this period the excessive number of bacteria alone indicated the previous pollution.

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* Vide also "*The Examination of Water and Water Supplies*," J. C. Thresh, pages 361 and 364.

Table I.

Experiment I.—EPITOME OF RESULTS.

TAP WATER POLLUTED WITH SEWAGE, 1 PART SEWAGE IN 100,000 PARTS WATER (ONE HUNDRED THOUSAND).

Number of days after pollution.	Number of Organisms per cc. counted after			Number of cc. in which B. C. C. found.	Number of cc. in which B. E. S. found.
	2 days.	3 days.	4 days.		
0	9	18	27	1	125
2	110	168	249	10	?(experiment spoiled)
4	25	476	liquid	5	375
6	654	liquid	liquid	5	not in 500
9	1151	2022	liquid	20	not in 500
14	594	liquid	liquid	not in 36	not in 500

The second series of experiments were really a repetition of the first, using a more impure sewage, and unfiltered tap water.

ANALYSIS OF WATER USED IN SECOND SERIES OF EXPERIMENTS.

Ca. 9·8	Mg. ·4	Na. 1·5	CO_3. 11·9	SO_4. 5·0	CL. 2·3	NO_3. 1·5	Probable Constituents.	Parts per 100,000.
7·9	—	—	11·9	—	—	—	Calcium carbonate ...	19·8
1·9	—	—	—	4·6	—	—	Calcium sulphate ...	6·5
—	·1	—	—	·4	—	—	Magnesium sulphate ...	·5
—	·3	—	—	—	·9	—	Magnesium chloride ...	1·2
—	—	·9	—	—	1·4	—	Sodium chloride ...	2·3
—	—	·6	—	—	—	1·5	Sodium nitrate	2·1
							Total solids by addition	32·4
							Total solids dried at 180° C.	33·2

Free Ammonia 0·0040, Organic Ammonia 0·0056, Oxygen absorbed (3 hours at 98° F.) 0·060.

Colonies per cc. In 2 days 20, in 3 days 40, in 4 days 111. No *B. C. C.* in 36 cc. Negative *enteritidis* test with 500 cc.

TABLE II.

Number of days after pollution.		Colonies per cc.		McConkey's broth tubes.				Plate from McConkey. Number of cc.	Growth on plate. Characteristics.	Colony from plate.	Litmus lactose Broth.	Peptone for Turbidity and Indol.	Milk for acid curdling.	From Litmus Lactose Motility.	Staining by Gram.	Bacillus enteriditis sporogenes. Clotting, gas, and strong acid smell.	
		from 5 cc.	from 10 cc.	1 cc.	5 cc.	10 cc.	20 cc.				Acid, Gas					125 cc.	375 cc.
0	2 days	10	8	+ +	+ +	+ +	+ +	1	Red colonies White haze	1	+ +	+ +	+ +	+	—	—	—
	3 ,,	14	12							2	+ +	+ +	+ +	+	—	+	+
	4 ,,	28	26							3	+ +	+ +	+ +	+	—		
2	2 days	102	118	— —	— —	+ +	+ +	10	Red colonies White haze	1	+ +	+ +	+ +	+	—	experiments spoiled.	
	3 ,,	148	177							2	+ +	+ +	+ +	+	—		
	4 ,,	232	267							3	+ +	+ +	+ +	+	—		
4	2 days	22	27	— —	+ +	+ +	+ +	5	Red colonies White haze	1	+ +	+ +	+ +	+	—	—	+
	3 ,,	504	452							2	+ +	+ +	+ +	+	—		
	4 ,,	liq.	liq.							3	+ +	+ —	+ +	+	—		
6	2 days	626	681	— —	+ +	+ +	+ +	5	Red colonies White haze	1	+ +	+ —	+ +	+	—	—	+
	3 ,,	liq.	liq.							2	+ +	+ +	+ +	+	—		
	4 ,,	—	—							3	+ +	+ +	+ +	+	—		
9	2 days	1820	981	— —	— —	— —	+ +	20	Red colonies White haze	1	+ +	+ +	+ +	+	—	—	+
	3 ,,	2046	1997							2	+ +	+ +	+ +	+	—		
	4 ,,	liq.	liq.							3	+ +	+ +	+ +	+	—		
14	2 days	630	558	— —	— —	— —	— —	—	—							—	—
	3 ,,	liq.	liq.														
	4 ,,	—	—														

ANALYSIS OF SEWAGE USED IN THE SECOND SERIES OF EXPERIMENTS.

Source: Croydon Sewage Works.

Odour, urinous. Turbidity 71.

Chlorine	7·7 parts per 100,000
Free Ammonia ..	6·86 ,,
Organic Ammonia ..	1·89 ,,
Oxygen absorbed (3 hours at 98° F.)	7.50 ,,

Colonies per cc., about 10,000,000 at end of second day.

The *B. coli communis* was found in $\frac{1}{100000}$ of a cc.

The *B. enteritidis sporogenes* reaction was obtained with $\frac{1}{1000}$ cc. One part of the crude sewage was added to 100,000 parts of water, and the mixture kept in a dark cupboard.

Table III. epitomizes the results obtained. The detailed results are not recorded, since out of the 15 colonies on the bile salt agar plates selected for examination, 13 gave all the reactions of *B. coli*, the two other organisms differed only in not clotting milk, although they produced acid.

The results confirm those obtained in the previous experiments so far as the disappearance of the specific organisms is concerned, but the number of organisms present capable of growing upon gelatin is seen to go on increasing up to the conclusion of the experiment.

TABLE III.

TAP WATER POLLUTED WITH SEWAGE, 1 PART SEWAGE IN 100,000 PARTS WATER (ONE HUNDRED THOUSAND).

Number of days after pollution.	Number of Organisms per cc. counted after			Number of cc. in which B. C. C. found.	Number of cc. in which B. E. S. found.
	2 days.	3 days.	4 days.		
0	111	liquid	liquid	1	125
3	156	367	liquid	1	375
6	239	366	liquid	5	not in 500
9	341	707	2345	10	not in 500
12	403	1775	5080	36	not in 500
15	574	1920	liquid	not in 36	not in 500

EXPERIMENTS, SERIES IIIA AND IIIB.

In these experiments tap water was employed, to which one one-thousandth part of crude sewage had been added. One portion (IIIA) was kept in the dark, and the other (IIIB) exposed to diffused day-light in a stoppered bottle on the window-ledge outside the laboratory. The tap water before and after the addition of the sewage was examined with the following results:—

	Parts per 100,000.		
	Tap Water.	Sewage.	Polluted Water.
Chlorine	2·7	9·8	2·7
Nitric Nitrogen	·51	·9	·51
Nitrites	absent	absent	absent
Free Ammonia	0·0020	5·71	0·0077
Organic Ammonia	0·0130	1·97	0·0151
Oxygen absorbed (3 hrs. at 98° F.) ...	0·240	9·26	0·260
Turbidity	nil	62	nil
Colonies growing on Gelatine, 2 days	130	—	15,700
" " " 3 "	174	—	liq.
" " " 4 "	liq.	—	liq.

This sample of tap water undoubtedly contained the *B. coli communis*. With 5 cc. organisms were isolated which gave all the reactions save the production of indol; in larger quantities the bacilli gave all the reactions, including the formation of indol. Although no typical reaction of the *B. enteritidis sporogenes* could be obtained with 500 cc., yet with 125 cc. gas was produced and an atypical clot. This water was in every respect much worse than those previously employed. The crude sewage kept in the dark contained the *B. coli* in 1 cc. after twenty-seven days, that is, until the end of the series of experiments. Up to the ninth day the typical *enteritidis* change could be obtained with 1 cc., on the 16th day it could not be obtained with less than 4 cc., up to the 24th day it was found in 10 cc. but not in 5 cc., and on the 27th day it could not be obtained with less than 10 cc. With the sewage exposed to light the results were practically identical, but on the 27th day the *enteritidis* change could be effected with 8 cc.

Tables IIIA and IIIB give the results obtained upon examination of the polluted waters at various intervals. In the water exposed to the action of light, the *B. coli* could not be detected in 36 cc. on the 12th day, whereas it did not disappear in the sample kept in the dark until the 26th day.

The *enteritidis* reaction, on the other hand, was constantly obtained with 150 cc. of the water exposed to the action of light until the end of the experiments on the 26th day, but in the water kept in the dark it could no longer be obtained with 150 cc., though obtainable with 350 cc.

With this more seriously polluted water, therefore, both the *B. coli* and the *B. enteritidis* could be easily detected up to the 12th day in the water exposed to light, and until about the 20th day in the water kept in the dark, but at the conclusion of the experiments both waters still contained an excessive number of bacteria, thousands per cubic centimetre.

EXPERIMENT IIIA.

TAP WATER POLLUTED WITH SEWAGE, 1 PART SEWAGE TO 1000 PARTS TAP WATER.

POLLUTED WATER KEPT IN THE DARK.

Number of days after pollution.	Number of Organisms per cc. counted after			Number of cc. in which B. C. C. found.	Number of cc. in which B. E. S. found.
	2 days.	3 days.	4 days.		
0	15,700	liquid	liquid	1	150
3	34,900	liquid	liquid	1	150
6	11,100	liquid	liquid	1	150
9	2,050	3,500	5,100	1	150
12	985	1,565	1,980	5	150
16	555	1,220	1,670	5	150
20	880	1,560	3,550	10	150
24	700	1,820	7,600	36	experiment accidentally spoiled
26		not put on		not in 36	350
35		,,		,,	350

EXPERIMENT IIIB.

TAP WATER POLLUTED WITH SEWAGE, 1 PART SEWAGE TO 1000 PARTS TAP WATER.

POLLUTED WATER EXPOSED TO THE ACTION OF LIGHT.

Number of days after pollution.	Number of Organisms per cc. counted after			Number of cc. in which B. C. C. found.	Number of cc. in which B. E. S. found.
	2 days.	3 days.	4 days.		
0	15,700	liquid	liquid	1	150
2	23,600	liquid	liquid	1	150
4	19,700	liquid	liquid	1	150
6	liquid	liquid	liquid	1	150
8	3,700	7,000	8,850	1	150
10	1,950	4,650	8,400	5	150
12	480	1,025	1,580	20	150
15	905	1,810	liquid	not in 36	150
20	2.095	2,960	liquid		150
24	1,990	2,140	liquid		150
26		not put on			150

Since the completion of the above series of experiments, the utility of the results has been markedly demonstrated. The water from a certain deep well was found to contain a very excessive number of bacteria, yet to be free from the *B. coli*, using 36 cc. for the experiment. On the other hand, the water gave the typical *enteritidis* reaction, using 150 cc. From the experimental results it is tolerably certain that the water supplying this well is polluted at a point at such a distance from the well that a period of several days elapses before it reaches the pumps. During this interval the *B. coli* disappears, but the other indications of the pollution remain. Probably also the pollution is entering through some fissure, and the water traversing fissured rocks, otherwise the bacterial flora would not be so abundant.

The results, so far obtained, are placed on record, as they may possibly be of use to others engaged in the bacteriological examination of well waters. Their bearing will be more fully discussed at a later date, when other contemplated experiments have been completed.

LONDON HOSPITAL PUBLIC HEALTH LABORATORY,
May 8th, 1905.

PUGGING AS A CAUSE OF DRY-ROT.—Professor Nussbaum states in a communication to the *Zeitschrift für Architektur und Ingenieurwesen* that for many years past he has been investigating the causes of the alarming increase in the prevalence of dry-rot in houses, and that in a great many cases he has traced the origin of this disaster to the employment of pugging composed of damp and unsuitable materials. In lieu of using concrete for this purpose, he finds that a loamy gravel is often inserted between the joists, which frequently contain in them the mycelium and spores caused by defective seasoning; and the presence of this moist substance induces a rapid growth of the fungus. He has, however, discovered a far more suitable mixture, which he calls "milk-mortar," composed of slaked lime, with one or two parts of sand, and tempered with skim milk. This mortar, which sets quickly and becomes very hard, is impervious to moisture and clings firmly to the timber; it is also extremely tough, and can be used in thin layers under floors with great advantage.

INDUSTRIAL EMPLOYMENT OF VARIOUS GASES.—The Health Section of the Department of the Seine has under consideration a project for the classification of manufactories engaged in the production of combustible gases other than illuminating gas. According to the *Journal des Usines à Gaz* of March 5, it is proposed to place these gases in nine categories, as follows: (1) Water gas; (2) Gazogene or producer gas; (3) Gazogene carbonic acid gas; (4) Gazogene water gas; (5) Producer gas from wood; (6) Blast furnace gas; (7) Hydrogen gas; (8) Carburetted air; and (9) Sulphuretted hydrogen. A detailed explanation is given of what is understood under each of these processes; under Section 3 is comprised the gas from that form of producer in which a certain amount of the heat evolved in the preparation of carbonic oxide gas is expended in the deoxidation of a further quantity of carbonic acid gas, by introducing into the generator along with the atmospheric air a certain proportion of carbon dioxide, which is decomposed and renders the producer gas so rich in carbonic oxide that the temperature of combustion may attain to 2,440° Centigrade. Under Section 4 is included apparatus in which the producer gas is mixed with water gas by admitting steam into the producer, together with the air, by which means a mixture of 58 volumes of producer gas with 42 volumes of water gas can be obtained. No. 7, hydrogen gas, is a by-product in the preparation of oxygen gas from water and certain other electrolytic processes. It would seem that some proposals have been made to produce and burn sulphuretted hydrogen, but obvious reasons exist for bringing the manufacture of this gas under control.

ATMOSPHERIC PRESSURE AND APOPLEXY.*

By W. H. SYMONS, M.D., D.P.H.,
Medical Officer of Health and City Meteorologist for Bath.

In the *British Medical Journal* for April 9, 1904, page 835, a correspondent asks.—"Is atmospheric pressure a possible determining cause of cerebral hæmorrhage?" He himself answers the question in the affirmative, and writes: "I now so look upon this as cause and effect, that I warn such patients to watch for a sudden rise in the barometer and to take precautionary measures in the matter of diet, stimulants, and the use of suitable purgatives at such times." In the same journal for June 4, page 1311, three other writers express the opinion that changes of atmospheric pressure are coincident with an increase in the number of attacks of apoplexy.

Under these circumstances I thought it would be interesting to ascertain if the registered deaths from cerebral hæmorrhage, apoplexy, and hemiplegia, were more numerous during anticylones than at other times. Meteorological charts kept in my office show the barometric and thermometric records for every day for the past eight years. I had merely to insert deaths from apoplexy, to see the conditions obtaining at time of death and for some weeks previous. I first took the returns for Bath for three years, 1901,-02,-03, including 121 deaths.

Barometer ...	28·8	28·9	29·0	29·1	29·2	29·3	29·4	29·5	29·6	29·7	29·8
Days	1	3	8	14	23	30	39	68	59	94	130
Deaths ...	—	-	1	—	3	3	6	4	7	12	8
Days per death	—	—	8	—	7	10	6	17	8	8	16

Barometer	29·9	30·0	30·1	30·2	30·3	30·4	30·5	30·6	30·7	30·8
Days	119	153	125	108	59	38	17	8	2	1
Deaths	16	13	16	8	11	6	3	4	—	—
Days per death ...	7	12	8	12	5	6	5	2	—	—

The mean of the 9 a.m. corrected readings of the barometer was 29·84 inches. It will be seen that 64 per cent of the deaths took place when the barometer was above the mean, but it was above the mean on 57 per cent of the days. When the barometer was above 30.3 there was a marked excess of deaths, but obviously we ought to deal with the date of attack and not with the date of death. Unfortunately, in only 15 per cent of death certificates was the date of attack or duration of illness stated, and the population with which I was dealing was too small to furnish reliable statistics as to the average duration of illness.

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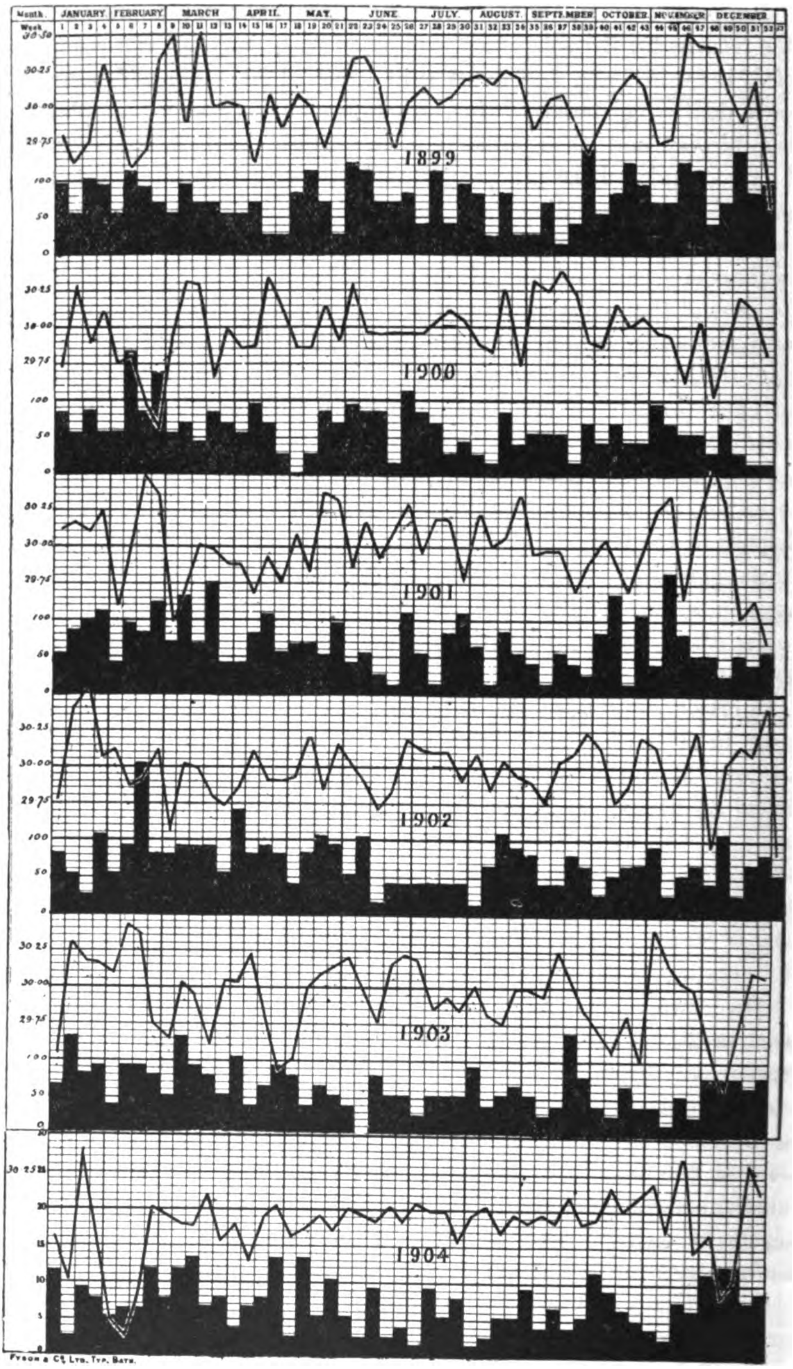
* Read before the West of England Branch of the Society of Medical Officers of Health, January 19th, 1905.

I appealed to Dr. Davies, and he was kind enough to allow me to use the returns for Bristol, which, combined with Bath, gives a population of 371,000 in 1899, and 406,450 in 1904. I have charted separately each death registered as due to cerebral hæmorrhage, apoplexy, or hemiplegia, and then collecting in weekly and monthly groups, I have calculated the rate per 100,000 for each group, and charted these with the corresponding meteorological conditions. There were 344 deaths registered as due to hemiplegia and 1,231 to cerebral hæmorrhage or apoplexy. It seems useless to trouble you with figures for each of these causes, and the two districts may also be treated as one as regards atmospheric pressure : generally there would not be more than 0·02 between the corrected readings of the two stations, and in an exceptionally severe storm not more than 0·04 inch. The barometric readings have been corrected for temperature and elevation above sea-level. The atmospheric pressure is only of interest as an index to other atmospheric conditions. If changes of pressure could predispose to apoplexy, then a ride from Lansdown to the Guildhall would be dangerous to elderly persons, as the barometric pressure rises half an inch within a mile. But the death-rate from apoplexy in Bath is below the average, notwithstanding the age constitution of our population.

Duration of illness.—In 1575 certificates, the date of attack was given in 299 as follows.—There were 48 deaths within 12 hours of the attack ; 26 deaths between 12 hours and one day ; 13 with duration of illness 36 hours ; 24 with two days' illness ; 39 with three ; 18 with four ; 15 with five ; 8 with six ; and 18 with seven days' illness. Thus 209 deaths or 70 per cent of all occur within seven days of attack. In 48 cases the duration of illness was from one to four weeks, making a total of 80 per cent under one month. Of the remainder, the duration of illness was between one and seven months in 17 cases ; one year in 5 cases ; two years in 12 ; three years in 3 ; four years in 2 ; and five years in 2 ; while one death was referred to an attack 36 years previously. From these figures it seems that we shall be on fairly safe ground in comparing deaths taking place in any particular month with the atmospheric conditions of that month. The Charts on pages 604 and 606 show the results of weekly and monthly observations. Other meteorological conditions can be ascertained from the Annual Reports of either Bristol or Bath. I have also given the mean area of Sun-spots for 1899-1902, in millionths of the sun's visible hemisphere. I can trace no relationship of apoplexy with solar or terrestrial records.

CEREBRAL HÆMORRHAGE AND ATMOSPHERIC PRESSURE.

DEATH-RATES PER 100,000, AVERAGE 9 A.M. PRESSURE, BATH AND BRISTOL.



FYSON & Co. LTD. TYP. BATH.

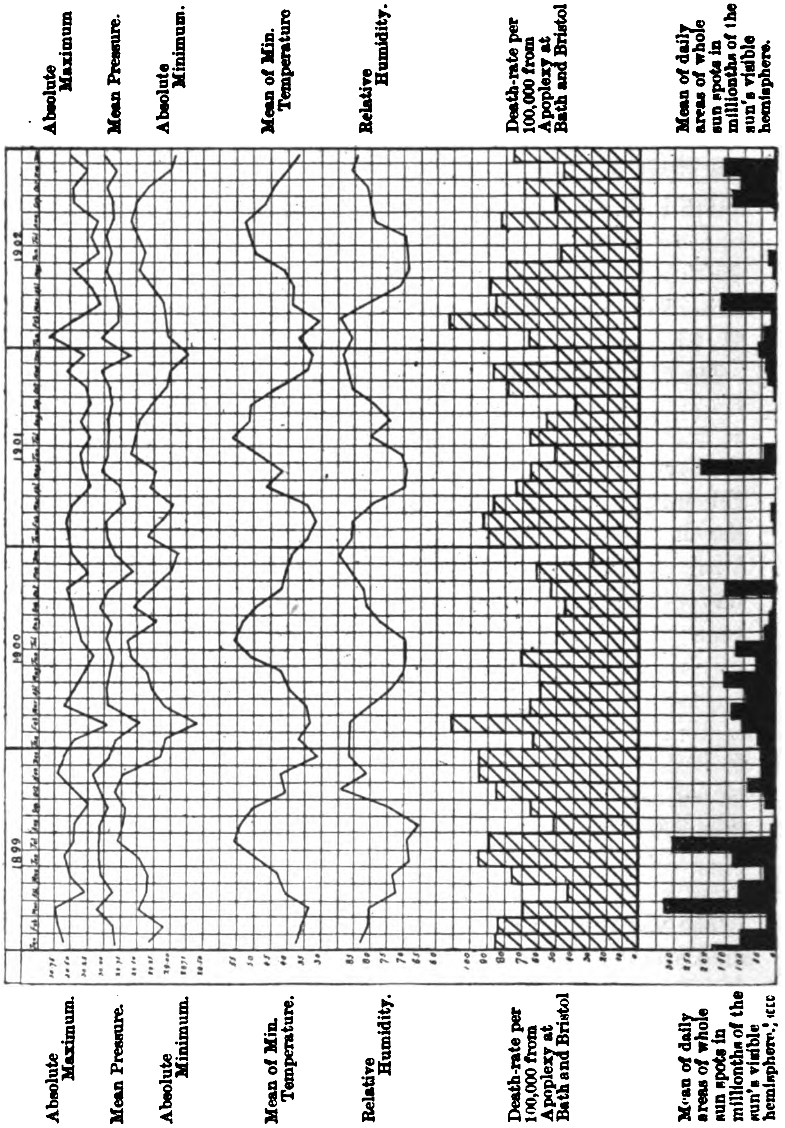
Deaths from apoplexy are most common in February, least so in September. February is the most fatal month for elderly persons. I need hardly say that I have not forgotten that February only has 28·25 days. It is during the mid-winter that the organs of circulation are most taxed, apoplexy being only one manifestation of the weakness of the vessels. When dealing with large numbers, the death-rate from apoplexy does not vary much from year to year, only 5 per 10,000. This is also true of the death-rate of persons between 65 and 75 years of age. The death-rate curve of persons of this age-period is practically identical with the curve for apoplexy. During the decade 1893–1902, the death-rate from all causes among persons between 65 and 75 varied from 58 to 68 per 1,000 persons of those ages, and from apoplexy the death-rate varied from 72 to 82 per 100,000 of all ages. In Bath and Bristol the death-rates from 1899 to 1904 were as follows: 78, 60, 69, 61, 64, and 72, the mean death-rate for six years being 67 per 100,000.

Death-rate from cerebral hæmorrhage for each month.—

	Lowest	Highest	Mean of six years.
January	63	90	78 per 100,000.
February	73	111	92 ,,
March	66	102	82 ,,
April	43	89	70 ,,
May	61	81	71 ,,
June	47	95	60 ,,
July	40	89	58 ,,
August	45	83	58 ,,
September	39	65	53 ,,
October	51	85	68 ,,
November	34	95	65 ,,
December	28	105	72 ,,
Year	60	78	67 ,,

The variation in December is remarkable. The death-rates for the six Decembers being 95, 28, 50, 76, 78, and 105; the variation exceeds the mean death-rate. If we compare the daily records for these and the preceding Novembers, we find that in neither month was there an anti-cyclone, but that the December with the low death-rate had an even temperature: only on four days did the maximum fall below 50°, and only on four days did it rise above 55°; while last November the maximum was on four days below 40°. The mean monthly variations are shown in the chart on page 604.

BAROMETRIC PRESSURE, MEAN OF MINIMUM TEMPERATURE, RELATIVE HUMIDITY, DEATH-RATES FROM APOPLEXY AT BATH AND BRISTOL, AND THE MEAN DAILY AREA OF WHOLE SUN SPOTS DURING THE FOUR YEARS 1899–1902.



A CRITICISM OF THE SALE OF WHISKY BILL, 1905.

By J. R. CURRIE, B.A. (Oxon.), M.B., Ch.B. (Glasgow), D.P.H.
Pupil Assistant to the Medical Officer of Health for the City of Glasgow.

The appearance this session of another Sale of Whisky Bill has conveyed to the minds of some a promise of benefit to the public health. In view of this circumstance it appeared desirable to Dr. A. K. Chalmers, the Medical Officer of Health for the City of Glasgow, that one should submit the Bill to a measure of enquiry.

The Bill proposes that the spirit sold as whisky should be distinguished by one or other of two labels, of which one is to be "whisky," and the other is to be "blend of whisky and patent-still spirit." The object of the Bill is ostensibly the guidance of the consumer of whisky. That which bears the historic name is to be separate from spirit of less merit; and he who consumes the false with the true is no longer to do so unwittingly. It seems as if the Bill gave assurance of protection from dietetic error. When, however, one observes that the text of the Bill employs the word "whisky" in a somewhat special sense which is not at the least the sense familiar to all consumers, and that the class, "patent-still spirit," as described in the text, includes both good spirits and evil as these are commonly understood, one inclines to a more guarded confidence in the protection which is promised.

I. Whisky.

For the examination of a measure which bases its proposals on a technical classification of the whiskies so-called, it appears pertinent in this place to recall certain details connected with distillation, by which the various so-called whiskies are prepared.

Distillation.—Distillation for the purpose of this enquiry may be regarded as a terminal stage of the preparation from starch of the spirit described as whisky. Starch by reaction with diastase or sulphuric acid yields glucose. Glucose by the growth of the yeast plant yields alcohols and other volatile compounds. From the fermented liquor the spirit which is known as whisky is prepared by means of an apparatus for distillation; and in the sense of this common understanding the word whisky will be here used unless otherwise indicated.

The quality of the spirit which is derived by distilling is dependent in general on two factors, (1) the constitution of the fermented liquor, and (2) the form of apparatus by which distillation is effected.

1. *The Constitution of the Fermented Liquor* varies with the source of the starch from which glucose is obtained, and with the method by

which the conversion of starch into glucose is conducted. Three main varieties of fermented liquor result by these conditions.

From pure malt of barley, glucose is obtained by the action of malt diastase on the starch of its own barley.

From malt and corn, glucose is prepared by the action of malt diastase, not only on the starch of its own barley, but also on the starch of added corn.

From unmalted grain, glucose results by the action of sulphuric acid on the starch of the grain employed.

2. *The forms of apparatus* by which distillation is effected may be stated as two in number, and are known as the Pot Still and the Patent Still respectively.

The pot-still method is older, slower, and more expensive. The pot still does not rectify its spirit; rectification is subsequently performed, and the class of end-product resulting by the pot-still method shows water and alcohol with a notable proportion of volatile essences. The patent-still method is more specialized and newer; it is also speedier and cheaper. The details of patent stills vary, but the principle involved appears to consist in the simultaneous distillation and rectification of the spirit, in such a manner that the class of distillate recovered by the patent-still method contains a smaller proportion of essential oils than is found in the distillate of the pot still.

The quality of the spirit procured by distillation may therefore be taken to vary with six combinations:—

1. The Pot Still with liquor of pure malt. "Pure malt whisky."
2. The Pot Still with liquor of malt and corn. "Rectifying pot-still whisky."
3. The Pot Still with liquor of unmalted grain. Not commercial.
4. The Patent Still with liquor of pure malt. "Patent pure malt whisky."
5. The Patent Still with liquor of malt and corn. "Grain whisky."
6. The Patent Still with liquor of unmalted grain. "Commercial spirit."

The designation of whisky or spirit, which is appended to each of the six methods with one exception, has reference to the end-product of that method, and will be employed for convenience sake in this single sense. The one exception is described as not commercial, for it is apparent that the preparation of an inferior spirit by an expensive method offers no practical advantages.

Ageing and blending are processes in the treatment of whisky subsequent to its distillation and rectification. These processes will be considered in their relation to the five classes of spirit which have commercial significance.

The Qualities of the Classes of Spirit.—*Pure Malt Whisky.*—This spirit is composed of alcohol and water, with a large presence of odorous essences. It has been stated by those who are experienced in the assimilation of whisky that the subsequent effects of pure malt whisky, in dietetic as well as in massive doses, are more disquieting than the subsequent effects of spirits which consist either wholly or in an appreciable degree of grain whisky. Apart altogether from the consideration that most palates are not gratified by the stimulus of pure malt whisky in a recent condition, it would appear that a life in the open air is essential for prolonged tolerance of its use. It is the not infrequent experience of dwellers in towns who frequent the moors of the Scottish Highlands during the appropriate season, that the malt whisky which was found innocuous during the period of exertion leads to impairment of bodily condition if continued after the return to a less active habit. The quality in malt whisky which gives rise to symptoms of this nature is associated with the high proportion of essential oils. As the aromatic compounds are transformed by the lapse of time and the spirit grows mellow with age, this high proportion diminishes. In other words, as malt whisky tends to lose certain of the physical characters which differentiate it from grain whisky, it tends at the same time to lose certain of the qualities which influence the consumer adversely.

Rectifying Pot-still Whisky.—This spirit is composed of alcohol and water, with a moderate quantity of essential oils. The distillation of the fermented liquor of malt and corn in a pot still, volatilizes certain essences whose presence in the distillate would decrease its value as a beverage. The pot still in its simple form cannot be used in the process. The withholding of the unpleasing compounds is effected by fitting the pot still with a rectifying head, so that the spirit is simultaneously distilled and purified. A pot still which rectifies seems allied to the patent class. Rectifying pot-still whisky may be regarded as possessing in a minor degree the qualities of pure malt whisky. Its proportion of essential oils is less high ; it is less rich in flavour ; in its constitution and hygienic value it may be said to occupy an intermediate position.

Patent Pure Malt Whisky.—Distillation of the liquor of pure malt in a patent still is a method of preparing whisky. It appears that it is little practised. The product of this method resembles pure malt whisky, and shares with it its qualities.

Grain Whisky.—Grain whisky is obtained by the distillation of the fermented liquor of malt and corn in a patent still. The simple distillation of such a liquor as has been stated above liberates displeasing essences. As in the case of rectifying pot-still whisky, the offending compounds are excluded from the distillate by simultaneous distillation and purification ; and the immediate end-product is a spirit which is more rectified than the pure malt whiskies, less redolent of essences than these, a spirit which is tasteless comparatively, and suitable for blending, the silent spirit of the patent still.

Intoxication aside, it is the opinion of certain experts already referred to, that grain whisky, as compared with pure malt whisky, whether in large amount or in small, is followed by less disagreeable after symptoms. This smaller deleteriousness of grain whisky is attributed to the low proportion of essential oils which are present in it. Owing to the same low proportion, new grain whisky may be consumed with less hurt than new pure malt whisky. Grain whisky itself—like pure malt whisky—mellows with age; and, in virtue of its more moderate content of essences, mellows more rapidly.

Some consumers are satisfied to drink pure grain whisky; others find the pure spirit wanting in flavour, and are pleased with a *blend* or mixture of pure malt whisky with the grain whisky. The blend offers a sufficiency of taste which it owes to the pure malt whisky, and promises at the same time a certain exemption from untoward sequelæ, since the richer whisky is diluted with a more silent spirit.

Commercial Spirit.—The spirit, which is derived from unmalted grain, is rectified as it is distilled, by the patent still; but the process of purification is less complete than in the case of more valuable spirits. The method is without reference to fine flavour, and the end-product may contain sulphuric acid derivatives, higher alcohols, and other compounds which are hurtful to the animal organism. The spirit of unmalted grain is not used by blenders as a constituent of reputed blends, but it is open to retailers to employ it as a component of spirits which they describe as whisky.

The Relative Merit of the Classes of Whisky.—Among the five forms of spirit considered, commercial spirit is distinguished as potentially injurious in relatively moderate doses. In this detail it detaches itself from all the others as of a separate order.

The quality of wholesomeness for the purpose of this section refers to defective conditions of health which result in the individual by neglect of the dietetic mean, not to the major question of intemperance as associated with intoxication, inefficiency, and destitution. Commercial spirit beng separated, the quality of wholesomeness in this sense is the standard for judgment of the four spirits which remain.

First in excellence is grain whisky, the spirit which is largely free from heavy essential oils. Scarcely inferior are certain blends into which grain whisky enters. Next in the series is placed rectifying pot-still whisky, a spirit in which the proportion of essential oils is not excessive. Last in order of wholesomeness are the pure malt whiskies, notably pot-still pure malt whisky with its rich abundance of flavour.

Patent pure malt whisky may be looked on as of a similar quality to the pot-still variety.

The order of merit here stated is founded on a considerable consensus of opinion.

II. The Bill.

The Sale of Whisky Bill proposes the application of two forms of label in order that the consumer may distinguish two indicated forms of spirit.

Definitions of the Bill.—The definitions of the bill appear on p. 1 of the text. Whisky is defined as "the product of the distillation of the fermented wort of pure malt or of malt and corn with yeast and distilled in a pot still."

Patent-still spirit is defined as "any spirits of the kind sold as whisky other than the product of the distillation of the fermented wort of pure malt or of malt and corn with yeast and distilled in a pot still."

The form of the still is to demarcate whisky from patent-still spirit. The definitions seem arbitrary; they do not accord with the common knowledge of consumers; in considering the Bill, however, it is at the moment merely important to observe that "whisky" as defined means pure malt whisky and rectifying pot-still whisky, and that "patent-still spirit" as defined means patent pure malt whisky, grain whisky, and commercial spirit.

The Hypothesis of the Bill.—If the Bill is a serious measure in the interest of the public health, the significance of the labels is intended to be that of the two classes, "whisky," and a "blend of whisky and patent-still spirit," one is relatively wholesome and the other is relatively less wholesome. Which of the classes is more wholesome and which is less wholesome, the Bill does not explicitly state; but this is implied with clearness; for the one class is distinguished with a venerable name; to the other is denied the fullness of this honour. Since "whisky" is relatively wholesome, and a "blend of whisky and patent-still spirit" is relatively less wholesome, it is apparent that patent-still spirit is stigmatized as a relatively deleterious substance. Translating the terminology of the Bill in accordance with its definitions, one notes that the proposal of labels is established on a hypothesis that pure malt whisky and rectifying pot-still whisky are relatively more wholesome, while patent pure malt whisky, grain whisky, commercial spirit, and the blends which contain them, are relatively less wholesome. It will not be thought vexatious to require that this hypothesis in its turn should rest, if not on a basis of accepted fact, at the least on a certain unanimity of experts. So little is either the case, that it has been possible, in the previous section of this enquiry, to state an order of merit for spirits, supported by a considerable consensus of opinion, which is in disaccord with the hypothesis of the Bill.

Commercial spirit and patent pure malt whisky are the only substances as to which the Bill and the above consensus are in some agreement. *Commercial spirit* is placed by the Bill in the less wholesome class; the consensus, with more correctness, detaches commercial spirit from all others as potentially noxious. As regards the less wholesome qualities of *patent pure malt whisky*, the Bill and the above consensus are in accord, though for different reasons.

But as concerns *pure malt whisky*, the Bill and the consensus are in direct opposition. The Bill places this whisky in its higher class; according to the consensus, it suffers by its richness in essential oils.

Rectifying pot-still whisky, in the view of the consensus, has intermediate qualities; at the least it is not justified to raise it as a class above grain whisky. This suggestion is traversed by the Bill.

Grain whisky, in the mind of the consensus, stands high, or highest, in merit, for it is tolerable under conditions which forbid pure malt whisky; the Bill joins grain whisky and commercial spirit in the same discredit. As to *blends* which contain grain whisky, the stigma of the label "blend of whisky and patent-still spirit" ignores one of the good uses of grain whisky, for in blends the admirers of pure malt whisky may enjoy the high flavour of that spirit, and elude in a manner the influences of its essences. It is retrogression, according to the consensus, to discourage blends which contain grain whisky. These are considerations enough to show that the hypothesis which sanctions the proposals of the Bill is not based on that unanimity which was suggested as desirable, but is, on the contrary, in all details but two, directly repugnant to a significant body of opinion.

The Utility of the Bill.—Following this body of opinion, one has interest in speculating on that which would result by the passing of the Bill.

The patrons of pure malt whisky and of rectifying pot-still whisky would have no indication to change. The consumers of patent pure malt whisky—probably a minor class—would be warned by the labels that they were not doing well, but it would profit these consumers little to drink pot-still whisky instead. The consumers of grain whisky or of blends containing it, if they were induced by the labels to transfer their allegiance to pure malt whisky, would no doubt observe a certain discomfort, and would return to grain whisky or its blends. None of these classes of consumers would be the better for the passing of the Bill. To consumers of commercial spirit and its blends, on the other hand, the Bill offers sound guidance; but there is reason to fear that these persons, too often the seekers of intoxication, would discount the constitution of a whisky, if only its amount were abundant. They would be ill to persuade that there are other criteria than cheapness. There is an element of further confusion in that definition of the Bill which obliterates the distinction between grain whisky and commercial spirit, by classifying both indifferently as patent-still spirits. Blenders of repute, it is true, would continue to observe the distinction; unscrupulous purveyors, if they failed to observe it, would appear to have a pretext.

The above considerations do not favour the hope that the Sale of Whisky Bill will advance the dietetic welfare of consumers.

The Memorandum.—" The object of this Bill is to secure to purchasers of whisky a clear statement whether it is a whisky made in a pot still from pure malt and corn, or is in part a spirit made in a patent still from unmalted grain."

This is the import of the memorandum, that there are pot-still whiskies, and there are spirits made in a patent still from unmalted grain; and consumers are to note the difference. The memorandum has no cognizance of spirits that are made in a patent still from malt and corn; and it gives the impression that the Bill is directed solely against the spirits of unmalted grain. On turning to the text, however, it is observed that the proposal, without mentioning either by name, will discredit, not only the spirit of unmalted grain, but also the spirit which is well known as grain whisky. One who desires guidance as to the purport of the Bill will not find the memorandum quite reliable.

Other Considerations.—As touching the public health in the major aspect, beyond the merely dietetic, the Bill has negative qualities. It does not aspire to the utility of dealing with the intemperate consumpt of intoxicants, and it does not pretend to remedy the physical deterioration and social degeneracy which are ascribed by many to alcoholic excess. If there are functions of the Bill which are other than hygienic they lie without the set bounds of this enquiry. It has been one's commission to estimate the bill from the point of view of sanitary science, and the economic factor has been excluded; but the scope of the proposal is such that local and national interests in the commercial sense tend to complicate or obscure the reference of the measure to the public health. One is aware that the position here maintained has not the convincing basis of experimental science; much that concerns the relative merit of whiskies is matter of opinion rather than demonstration; but there is a certain service in raising the question now, if by so doing it discovers that the Bill does not rest on universally accepted fact, but on grounds which are at present controversial and which are contrary to the judgment of many.

PARLIAMENTARY NOTES.

The Sewage Disposal Commission.—In reply to Mr. J. F. Hope, Mr. Grant Lawson said the total cost of the Royal Commission on Sewage Disposal up to March 31st last, amounted to £35,362. He was informed that the Commission hoped to issue a report this year dealing with the relative merits of different methods of sewage disposal and certain other questions. He understood, however, that it could not be stated at present when the final report would be issued.

Alien Immigrants.—The eight ports to which the Aliens Bill is intended to apply are London, Grimsby, Hull, Newhaven, Southampton, the Tyne, Leith, and Harwich; but power is reserved to strike out ports from this list or to add ports to it, as may be found desirable. Practically no aliens arrived at Folkestone. Liverpool was not included in the list of ports, but some extra machinery will probably be required to deal with aliens who had been rejected in America, and who had come back. The Home Secretary estimates that the cost of excluding undesirable aliens will be about £54,000 a year.

Infectious Diseases (Ireland) Bill.—This is a Government measure, and its object is to make the law in Ireland like that in England, so far as regards the notification of cases of infectious disease, and the steps to be taken to prevent the spread of such diseases through the medium of day schools. The expenses incurred under the Bill by the Sanitary Authority will be regarded as expenses under the Public Health Act. It is proposed to come into force on January 1st, 1906.

Institutional Laundries.—A list of religious and charitable institutions which take in laundry work from outside by way of trade, or for purposes of gain, has been issued by the Home Office as a White Paper. In the absence of any power to call for information from such places, the Home Secretary is unable to say whether or not the list is complete. The institutions are classified in two divisions. Those named in Part I. have accepted inspection by the Factory Department in response to a circular letter issued by the Home Office in January, 1902. Those in Part II. either refused to accept inspection or in one or two cases gave no definite answer. Institutions (about sixty in number) who failed, after a reminder, to reply, are not included, as it was not known whether they carried on laundry work for gain or not. The list distinguishes between institutions attached to the Church of England, the Roman Catholic Church, and other religious or charitable bodies. There is no means, however, it is stated, of distinguishing conventual laundries from other laundries. The number of women employed in such laundries has increased enormously during the last few years, and it is believed that many thousands are so engaged in what must be an unfair competition with those working in inspected laundries. No less than 144,038 women and girls are engaged in laundries not regulated by the Factory and Workshops Act.

Public Health Acts (Amendment) Bill.—Lord Hylton, in moving the second reading of this Bill, explained that its objects were to exempt buildings sufficiently isolated from the operation of existing and future building by-laws, to render exempted buildings subject to by-laws relating to sanitation, and to empower the Local Government Board, upon representation by ratepayers, to disallow by-laws after confirmation where any such are found unsuited to the district in respect to which they apply or to operate contrary to the public interests. The Bill, he said, had not been instigated by the circumstances of a recent case in which a learned judge was concerned, but was printed and privately circulated before that case became public. What was desired was to encourage the provision of good and inexpensive houses by removing some of the restrictions which the building by-laws placed and imposed upon private enterprise. The Marquis of Lansdowne thought the subject required to be dealt with with very great caution, and although the Government realized that the Bill was well meant, it desired to guard itself against its being supposed that all the provisions were accepted. He understood that the object of the promoters was to steer a prudent course between the pretensions of the jerry builder on the one hand, and those who might be called pedants in architecture and building construction on the other. The Bill was then read a second time and referred to a select Committee.

Exclusion of Infants from Schools.—The Board of Education has recently informed certain rural education authorities that they will not be required to provide school accommodation for children between the ages of three and five, and it is rumoured that a similar regulation is in contemplation with regard to urban districts. The Board of Education has held in past years that a school authority is not justified in refusing admission to children to a school on the ground that such children were below 5 years of age; but there is no statutory justification for so doing, and there is no statutory obligation upon parents to send their children to school before the age of five.

Alkali, &c., Works Bill.—The object of this Bill is to consolidate the Acts on the subject passed in 1881 and 1892. It is practically the same Bill as that of last year; but some amendments have been introduced defining more clearly what is "noxious or offensive gas," and making the scope of the Acts dealing with such gas cover all the works from which it is given off.

CENTRAL MIDWIVES BOARD.

The Printing of the Midwives Roll.—At a meeting held on April 27th, a letter was read from Dr. Kaye, County Medical Officer of the West Riding of Yorkshire, forwarding a communication from a Conference of County Medical Officers held at Birmingham on March 10th last, asking the Midwives Board to consider the desirability of including in the Roll of Midwives a column showing the geographical position in which each midwife resided. It was agreed that an answer should be sent stating that the Central Midwives Board had taken note of the suggestion.

Appliances to be Carried by Midwife.—The communication from Dr. Kaye included also an enquiry as to the construction of Rule E 2. This rule provides that:—

"When called to a confinement a midwife must take with her: (*a*) An appliance for giving enemata, a catheter, a pair of scissors, a clinical thermometer, and a nail-brush; (*b*) an efficient antiseptic for disinfecting the hands, etc.; (*c*) an antiseptic for douching in special cases; (*d*) an antiseptic lubricant for smearing the fingers, catheters, douche nozzles, and enema nozzles before they touch the patient."

Dr. Kaye asked if the Board considered that it was absolutely necessary for the midwives to carry all that was required by Rule E 2.

The Chairman remarked that the Rule must be carried out, and if the midwives were too ignorant to do so, the question would arise whether they should be struck off the roll. After some discussion, it was agreed that the answer to be sent to Dr. Kaye was that the Central Midwives Board had no dispensing power.

The Meaning of the Word "Malpractice."—A letter from Dr. Niven, M.O.H., Manchester, was received, asking the Central Midwives Board what meaning was to be attached to the word "malpractice" in Section 8 (2) of the Act. In Section 8 one of the duties of the local supervising authorities is declared to consist of investigating charges of malpractice on the part of any midwife practising within their area.

The Board decided that the answer to be returned to this question was that each case must be judged on its own merits. Three local supervising boards reported that a prima facie case of negligence and misconduct had been made out against a nurse in their respective districts.

LAW REPORTS.

HIGH COURT OF JUSTICE.

KING'S BENCH DIVISION.

April 12th, 1905.

BEFORE LORD ALVERSTONE, L.C.J., KENNEDY AND RIDLEY, JJ.

SMITH *v.* SAVAGE.

Sale of Food and Drugs Act, 1875, Sections 6, 14—Cream of Tartar—Several packets mixed by Inspector.

An inspector bought four packets of cream of tartar from one box. He emptied the four into one place and mixed them up and divided the mixture into three parts. One of these was sent to the county Analyst, who certified that it contained lead in the proportion of ¾ of a grain to the pound. It was held that the mixing of the packets did not make the analysis invalid.

This was a case stated by the justices of Wiltshire, sitting at Marlborough, on the hearing of an information by the appellant, an Inspector under the Sale of Food and Drugs Acts, against the respondent, a grocer, for selling four penny packets of cream of tartar, which were not of the nature, substance, and quality of the article demanded, contrary to Section 6 of the Sale of Food and Drugs Act, 1875.

On August 9th, 1904, the appellant visited the respondent's shop, and saw there was some packets of cream of tartar. He asked the respondent if he sold cream of tartar, whereupon the respondent produced a box containing packets labelled, "Finest cream of tartar, 98 per cent bicarbonate of potassium, B.P., 1898." The appellant asked for four packets, which were all similar in size and outward appearance and label, and were taken from the same box. He paid 4d. for them, and told the respondent that the purchase had been made for the purpose of analysis. The appellant emptied the contents of the four packets into one place, and then divided the whole of the contents or matter into three parts, and sealed them up. One of these three packets was sent to the county analyst, another handed to the respondent, and the third packet was retained and produced to the justices by the appellant. The appellant said that cream of tartar mixed with bicarbonate of soda was used in baking powder, and also in the preparation of cakes, etc. The result of the analysis was to show that the cream of tartar contained lead in the proportion of three-fourths of a grain per lb. The respondent's solicitor contended that the appellant made four separate purchases, each packet being an article, and the appellant did not by mixing together the contents of the four packets and then dividing the substance so mixed into three parts comply with Section 14 of the Food and Drugs Act, 1875, and, in support of this argument, the case of *Mason* v. *Cowdary*, 1900, L.R. 2 Q.B., 419, was cited. That was a case in which six bottles of camphorated oil were bought; there was no division of the contents of any one bottle, but two bottles were sent to the analyst, two given back to the seller, and two retained by the Inspector. That was held not to be a compliance with Section 14. The justices dismissed the summons.

Holman Gregory appeared for the appellant, *Bonsey* for the respondent.

The court allowed the appeal.

LORD ALVERSTONE thought the appeal ought to succeed. The case was different from *Mason* v. *Cowdary*. Some question might arise if different articles not of a similar name or articles coming from different people were mixed together in the shop; that, however, was not the case with which they had to deal. In the case before them the appellant asked for cream of tartar, which, for the purpose of measurement, was put up in penny packets. He said he would take four packets, and they had to say whether because four packets of the same article, labelled in the same way, and sold at the time as cream of tartar, were mixed together and then divided into three parts, it was a good objection to the analysis that followed. He was of opinion that it was not a good objection. The case must go back to the justices to be tried.

KENNEDY and RIDLEY, JJ., concurred.

DIRTY AND CONTAMINATED MILK DEALT WITH AS UNSOUND FOOD.—At Marylebone Police Court, on April 14th, John Roberts, a farmer in Northamptonshire, appeared in answer to two summonses, taken out by the St. Pancras Borough Council, charging him, as owner of a churn of milk sold to the Dairy Supply Company (Limited) which was unwholesome and unfit for food, with depositing the milk at Euston Station for sale. Mr. Clarke Hall, barrister prosecuted, and Mr. Freke Palmer, solicitor, defended. Mr. Clarke Hall said that the proceedings were taken under Section 47 of the Public Health (London) Act, 1891. This was the first case of the kind in regard to milk. The defendant had been under contract with the Dairy Supply Company since March 25th, 1904, to supply them with pure new milk. On February 20th the churn of milk was sent to London, and was seen at Euston Station by a Sanitary Inspector in the employ of the Council, who found on the top dirt, consisting of cow dung, straw, and hair. Dr. Sykes, the Medical Officer of Health, pronounced the milk unfit for food. It was brought to that Court, and Mr. Paul Taylor condemned it. Three samples, two from the top and one from the bottom, were submitted for analysis to Dr. Eyre, bacteriologist at Guy's Hospital. The result showed the presence of a brownish deposit amounting to at least 4 per cent in the samples taken from the top, and 8 per cent in the sample from the bottom, consisting almost entirely of fæcal matter and pus cells. Experiments were made with this stuff on a healthy guinea pig, and it was shown that the offensive matter contained tuberculous bacilli, the *post mortem* examination of the animal showing clearly that it was affected with tuberculosis. He submitted that it was milk of this kind that was responsible for the large mortality among children, and as it was a real danger to the public health the Council had determined to take action. Evidence was then called in support of the statement. For the defence Mr. Freke Palmer said that the difficulty he had to contend with was that, unlike cases under the Food and Drugs Act, the defendant was not made aware that the samples had been taken until some time afterwards, and was, therefore, unable to make any inquiries as to how the milk came to be in the state in which it was found. The milk was sent off in a clean, pure, and wholesome condition, and he suggested that the presence of the filth in it on its arrival was due to the carelessness, spite, or the interference of some one while it was in transit. He submitted that the Public Health Act did not apply to such a case as this. The defendant was called, and stated that all his cows were in a healthy condition, and this was supported by a local Sanitary Inspector and a veterinary surgeon. Mr. Chapman adjourned the case to the Tower-bridge Police Court, where the hearing was continued on May 12th. John Elliott, employed by the defendant to milk the cows, gave evidence for the defence as to the straining of the milk and the care taken to prevent any impurities from getting into it. In reply, several railway officials were called, to prove that the milk had not been tampered with on the railway. Charles Gill, stationmaster at Castle Ashby, said that on several occasions he had seen filth on the defendant's milk. Mr. Chapman came to the conclusion that the filth on the milk came from the defendant's farm. The defendant shared his responsibility with others, but the law made him responsible for the acts of his servants. The defendant was fined £25 and five guineas costs.

PROCEEDINGS OF THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTITUTED 1888. INCORPORATED, 1891.

North-Western Branch.—An Ordinary Meeting of the Branch was held in the Chemical Club, Victoria Hotel, on Friday, April 28th. Present: Dr. J. B. Wilkinson (President). Drs. Brindley, Coutts, Garstang, Wheatley, Sergeant, Chadwick, Edlin, Hitchon, Barlow, Greenwood, Buchan, K. Fraser, J. H. Marsh, Forbes, Lawrence, Welsh, Deans, Cook, Chronnell, Berry, Martin, H. E. Watkins, Dearden, and M. Young; with Miss Merry Smith, Manchester, as a visitor. Letters of apology for absence were read from Drs. Hayward, Peck, and Vacher.

Provincial Meeting of the Society.—It was resolved that the Annual Provincial Meeting of the Society be held on Saturday, July 1st, at Lancaster, in accordance with the arrangements kindly made by Dr. Parker, of that town. It was resolved that in the event of the Lancaster Corporation not providing conveyances and afternoon refreshments for the meeting, this be undertaken at the expense of the North-Western Branch.

Dr. Lawrence read a communication from Dr. Herbert Peck relating to duties of Medical Officers of Health under the Education Act. The consideration of this communication was deferred until the next meeting, as it opened up a very wide subject.

Dr. Edward Sergeant then read his paper on the Midwives Act.*

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* See p. 583.

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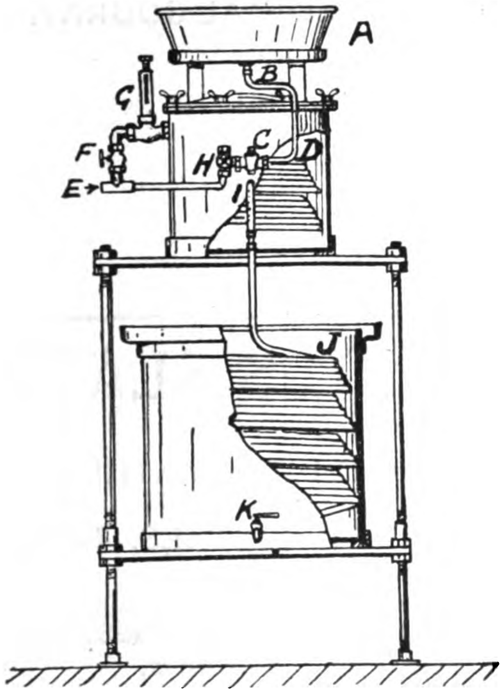

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CONTENTS.

No. 10, Vol. XVII., July, 1905.

PAGE

EDITORIAL—

COUNTY MEDICAL OFFICERS OF HEALTH - - - 619

SPECIAL ARTICLES—

INFANT MORTALITY (*T. Eustace Hill, M.B., B.Sc., F.I.C.*) - 623
SCHOOL SANITATION, AND THE DUTIES OF SCHOOL MEDICAL OFFICERS (*Alfred Greenwood, M.D., D.P.H.*) - - - 641
ON SANITARY WORK IN THE COUNTY BOROUGH OF WIGAN IN 1904 (*William Berry, F.R.C.S.I., D.P.H.*) - - 652
MILK DEPÔTS IN GERMANY (*Dr. Von Ohlen, Hamburg*) - - 655

PAGE

ANNOTATIONS—

THE LONDON COUNTY COUNCIL AND THE PUBLIC HEALTH - 622
GLOUCESTER M.O.H. APPOINTMENT - - - - - 622
DISINFECTION OF SCHOOLROOMS 622
THE LOCAL GOVERNMENT BOARD AND VACCINATION - 622
THE EFFECT OF FEEDING WITH MILK FROM IMMUNIZED COWS 640
MEASLES AND DIPHTHERIA - 651
OIL OF CLOVES FOR HAND STERILIZATION - - - 654
TENEMENT WATER SUPPLY - 663
SCHOOL HYGIENE - - - 664
ANTITYPHOID INOCULATION - 666

Continued on Page vii.)

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8th May, 1905.

J. POLGLASE,
Municipal Secretary, Singapore.

CONTENTS—*continued.*

PAGE

ANNOTATIONS (*continued*)—

The Prevention of Infantile Mortality - - - 667
Vagrancy and the Spread of Infectious Disease - - 669
Death of Mr. James Mansergh - - - - - - 679
Japanese Precautions against Typhoid - - 682

LAW REPORTS—

Firth *v.* McPhail - - - 670
J. Richards (Ltd.) *v.* Weston 671
Evans *v.* Mayor, Etc., of the City of Liverpool - - 673
Dried Milk - - - - - 677
Reducing the Quality of Milk - - - - - - 678
Cocoa-Nut Oil in Margarine 678

PAGE

LAW REPORTS (*continued*)—

Milk Warranty—Straining 678
Sausages containing Boracic Acid - - - - - - 679
Vinegar from Unmalted Grain - - - - - 679

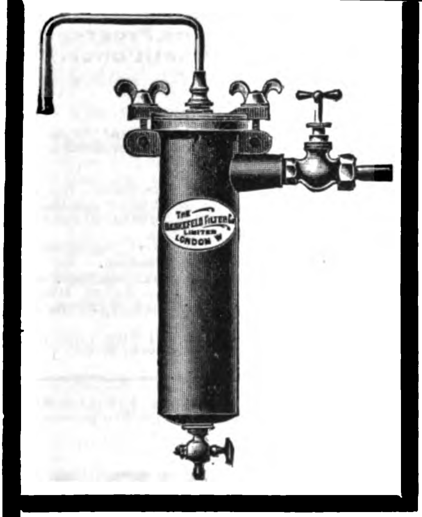
REVIEWS—

A Treatise on Plague - - 679
Pure Drinking Water, Its Importance, and How to obtain it - - - - 681

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH, THE—

North-Western Branch - 682
Yorkshire Branch - - 682

NOTICES - - - - xi, xii, xiii



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PUBLIC HEALTH:

The Journal of the Incorporated Society of
Medical Officers of Health.

Vol. XVII. No. 10. July, 1905.

EDITORIAL.

COUNTY MEDICAL OFFICERS OF HEALTH.

It is seventeen years since the Local Government Act of 1888 conferred upon County Councils, which were themselves created by the Act, the power to appoint Medical Officers of Health, but only 15 of the 50 English and one of the 12 Welsh administrative Councils have to-day the entire services of one of these officials, while there are nearly a score of the English County Councils, and half that number of the Welsh, without any official medical adviser at all. Although the duties of County Medical Officers of Health are very ill-defined, if, indeed, they are defined at all, it must be admitted that on the whole they have quite justified the anticipations of those who advocated their appointment. Nowhere is this more evident than in the small urban and in the rural districts, where public opinion is not so effective as it is in larger towns. It may be of interest to enquire why so large a proportion of the County Councils should have refused to avail themselves of powers deliberately cast upon them by the legislature; which refusal, moreover, has the effect in at least one instance, namely that of insisting upon the provision of adequate isolation hospital accommodation, of delaying useful sanitary reforms. The principal argument brought forward against a proposal to appoint a County Medical Officer of Health is invariably based upon financial considerations; and in most of the Welsh counties, as well as in a few of those in England, it will readily be admitted that the addition of £600 or £700 a year to the county rate is a serious matter. In Kent, with a population of a million persons, this sum would hardly be felt, but in Radnorshire, where the population is less than 25,000, or in Rutlandshire, where it is 20,000, the financial aspect cannot be lost sight of.

It is true that most of the larger counties already possess a Medical Officer of Health, though there are some noticeable exceptions. Among these are Devonshire, with a population of 450,000, Cornwall, with 330,000, and Monmouthshire, with 250,000. The large number of rapidly-increasing colliery villages in the last-named county render it especially necessary that there should be a wise central control, because the various sanitary authorities are almost compelled to carry out combined schemes for sewerage disposal or of water supply, which ought to be considered by the County Council on a broad and comprehensive scale, but in the absence of a public health adviser this is impossible. As regards the smaller counties, that is to say those with a population of less than 100,000 persons, it would be unreasonable to insist that a whole-time official should be appointed; but with the increased facilities for getting about the country and with the very complete system of telegraphs which has now been installed, there ought to be no difficulty in forming a combination of adjoining counties for the purpose of appointing a Medical Officer of Health.

Those members of County Councils who do not care to admit that they place pecuniary considerations before all others, have been in the habit of denying to County Councils any sanitary functions at all. The Urban and Rural District Councils, they say, are the sanitary authorities, and they must administer the Public Health Acts. These gentlemen apparently forget that where District Councils are in default, the County Council may not only call attention to the default, but have also the power to insist upon more active administration, although the authority which has no one to advise it upon public health matters, and in a sense is itself in default, is not very likely to be treated with much respect by a District Council, which at any rate has the advantage of being advised by a public health official. Even if there were any grounds for the contention, and we do not admit that there ever has been, that County Councils have nothing to do with sanitary matters, this plea is no longer tenable, for within the past two years County Councils have been called upon to administer Acts of Parliament which are very closely associated with the health of the country, and it is difficult to understand how either the Midwives Act or the Education Act can be administered satisfactorily in those districts where there is no responsible County Health Officer. In some counties it has been considered sufficient to appoint a nurse as the administering officer of the Midwives' Act, and the gravity of the position will possibly only be realized when this official, in consultation may be with the Clerk to the County Council, will have to decide whether a case of hyperpyrexia in a parturient woman is or is not "indisputably puerperal fever." There may perhaps be some excuse for those County Councillors who consider that the Education Act can be administered without the assistance of a sanitary adviser, for they have the example before them of the Board of Education. It is doubtful, however, whether even the Board could carry out the innumerable details devolving upon an Education Committee without any help from a specially trained Public Health Officer.

But it has been left to the members of the Wellington (Somerset) Rural District Council to enunciate a new argument against the appointment of a County Medical Officer of Health. The Somerset County Council has decided to appoint a Medical Officer whose time will only be partially given to the county work, and the Wellington Council, in sending a protest to the County Council, expresses the opinion that the appointment will be "enervating to the present district Medical Officers of Health, and will thereby render less efficient the good work at present being carried out." This protest having been sent officially to Dr. John Meredith, a member of the County Council and himself a Medical Officer of Health, that gentleman, in acknowledging the communication, has conclusively shown that the proposed appointment is not only required upon general grounds, but that in a county like Somerset it is urgently necessary. Members of the sanitary committee of the County Council have often felt, he says, that they are hampered for the want of an executive sanitary officer whose function it would be to inspect localities, report as to the state of things he found, and see that recommendations are carried out. He relates also how quite recently a committee of the Council had to report that they were not in a position to reply to a question respecting the use of antiseptics in milk because they had no expert Health Officer to advise them. This confession, too, had to be made in a county which has one of the largest milk trades in the country. Dr. Meredith will not admit the enervating influence of a County Medical Officer of Health, whose position of independence, he considers, enables him to assist the local Medical Officer of Health to get carried out urgently necessary sanitary work which local influences may have delayed.

The experience of the Somerset County Council is not an isolated one. Many other County Councillors who are anxious to discharge their obligations efficiently and conscientiously have found, like Dr. Meredith, that they have been handicapped by the absence of a County Medical Officer of Health. Surely the time has come when the appointment of these officials should be made obligatory on all County Councils in England and Wales.

THE LONDON COUNTY COUNCIL AND THE PUBLIC HEALTH.—Exception has been taken to the editorial article published under the above heading in the June number of *Public Health*. Inasmuch as the journal is described on the cover as "The official organ of the Incorporated Society of Medical Officers of Health," it might be inferred that the views expressed in the article are those of the Society. In order to prevent misapprehension on this point, we desire to state that so far as the article in question is concerned no such inference should be drawn. The subject of the article has not been considered by the Society or its Committees. As unsigned editorials have from time to time led to differences of opinion, we have decided in future to publish signed articles only.

GLOUCESTER M. O. H. APPOINTMENT.—The Local Government Board has sanctioned the appointment of Mr. W. More Hope in the first instance for one year, and provided the City Council at the end of the year still desires it, the Board will sanction the permanent appointment.

DISINFECTION OF SCHOOLROOMS.—The Committee on Disinfection of the American Public Health Association, in their review of the work of the year 1904, state that remarkable results have followed the occasional use of weak solutions of formaldehyde on the floors of schoolhouses—solutions so weak that they gave no disagreeable odour. Infectious colds and other dust-borne diseases were much lessened among the scholars. The Committee believes that the occasional use of such solutions on floors and surfaces in dwelling-houses, as well as in public buildings, would do a great deal towards improving public health.

THE LOCAL GOVERNMENT BOARD AND VACCINATION.—A correspondent who wrote to the Local Government Board to enquire whether the Board approved of the publication of the names of persons availing themselves of the services of the public vaccinator, has received the following reply: "Local Government Board, Whitehall, S.W., May 5th, 1905. Sir,—As regards the question submitted in your letter of the 26th ult., the Local Government Board direct me to state that they are not aware of any legal authority under which a Board of Guardians can pay for the publication of lists of the names of persons availing themselves of the services of the public vaccinators for the vaccination or revaccination of themselves, their children, or their servants. Moreover, it was intended by the Legislature that the benefits of the Vaccination Acts should be open to all classes of the population, and the Board strongly deprecate any action on the part of Boards of Guardians which would tend to suggest that public vaccination should be limited to persons who are not in a position to pay for the operation. In this connection I am to draw attention to Section 26 of the Vaccination Act, 1867, which enacts as follows: 'It is hereby declared that the vaccination, or the surgical or medical assistance incident to the vaccination, of any person in a union or parish, heretofore or hereafter performed or rendered by a public vaccinator, shall not be considered to be parochial relief, alms, or charitable allowance to such person or his parent, and no such person or his parent shall by reason thereof be deprived of any right or privilege, or be subject to any disability or disqualification.' I am, Sir, your obedient servant, JOHN LITHIBY, Assistant Secretary."

INFANT MORTALITY.*

By T. EUSTACE HILL, M.B., B.Sc., F.I.C.,
President of the Northern Branch and County Medical Officer for Durham.

Gentlemen,—Before commencing my address I wish most sincerely to thank you for the honour you have conferred on me in electing me your President. I am happy to say I have been associated with the present Branch from its formation about 1890, and was elected its first Hon. Secretary and Treasurer, a position I held for some years. I have therefore been brought into close touch with the majority of the members, and the assistance and kindness I have always received at their hands decided me, though I feel that the honour might with advantage have been given to some older and more experienced member, to accept the position of President, well knowing that I can rely on your assistance and also your forbearance in my earnest endeavours to discharge the responsible duties satisfactorily. I highly appreciate your confidence, and trust that nothing I shall do will derogate from the dignity of the office, which has been so worthily upheld by my predecessors.

The subject on which to address you to-night has been for me one of anxious consideration, but in choosing that of Infant Mortality I feel that I am dealing with one which is equally of interest to the medical practitioner and to the Medical Officer of Health, and, moreover, is becoming of vital importance to the future welfare of the nation. It is a matter of common knowledge that the mortality among our infant population is excessively high, more particularly in crowded urban districts, and the fact is emphasized by the majority of Medical Officers of Health in their periodical reports ; but it is not, I am afraid, so generally recognized that while as a result of improved sanitary and social conditions the general death-rate has declined from 23·3 to 17 per 1,000 population during the past fifty years, there has been no corresponding fall in the infant death-rate throughout England and Wales, but rather an increase during the last twenty years. It is true that from year to year there is a considerable variation in the proportion of deaths among infants (and I may here state that by infant mortality I mean the number of children per 1,000 registered births who die before they complete their first year of life), but that variation is largely the result of climatic conditions, and unfortunately does not indicate that any material decline in the infant mortality has been effected as a result of improved sanitation. As I have already stated, there has been a very marked decrease in the total death-rate during the past fifty years, resulting in the saving of some millions of lives, but the diminished mortality has not been among our infant population, as the following tables show :—

---

* Presidential Address delivered to the Northern Branch of the Incorporated Society of Medical Officers of Health, on February 24, 1905.

TABLE A.—ENGLAND AND WALES.

Period.	Mean Annual Infantile Mortality.	Period.	Mean Annual Infantile Mortality.
1853–57	154·2	1878–82	142·2
1858–62	152·8	1883–87	143·2
1863–67	155·0	1888–92	145·6
1868–72	155·8	1893–97	152·2
1873–77	148·0	1898–1902	152·2

TABLE B.—TOTAL DEATH-RATE (ENGLAND AND WALES) PER 1,000 POPULATION.

Period.	Mean Annual Total Death-rate.	Period.	Mean Annual Total Death-rate.
1846–50	23·3	1881–85	19·40
1851–60 (10 years)	22·17	1886–90	18·89
1861–65	22·58	1891–95	18·73
1866–70	22·42	1896–1900	17·68
1871–75	21·96	1901–4 (4 years)	16·2
1876–80	20·79		

Coming nearer home, to the county of Durham, I am sorry to say I have not such extended figures, but the vital statistics of the last fifteen years show that while there has been a distinct fall in the total death-rate, there is no similar decline in the infant mortality-rate. In fact the infant death-rate for the five years 1890–94 (158) was lower than the rate for the last five years 1900–4 (161) :—

TABLE C.—ADMINISTRATIVE COUNTY OF DURHAM.

Period.	Mean Annual Total Death-rate per 1,000 population.	Period.	Mean Annual Infantile Mortality per 1,000 births.
1890–94	19·3	1890–94	158
1895–99	18·1	1895–99	170
1900–4	18·0	1900–4	161

It is evident, therefore, that during the past fifty years there has been no marked reduction in the infant mortality in this country, and the same remark certainly applies to the populous county of Durham during the past fifteen years, and probably for a much longer period.

This continued slaughter of the innocents, in face of the marked improvements in the surroundings and education of the people, in itself is food for serious reflection by all sanitarians; but when considered in conjunction with a continuously declining birth-rate, it assumes a much more serious aspect. In the north of England, or at any rate in the counties of Durham and Northumberland, the birth-rate fortunately keeps at a high level, but in the country generally its decline during the last twenty-five years has been marked and persistent, falling from 35·8 per 1,000 population in the quinquennium 1873–77 to 28·8 during the five years 1898–1902, while for 1903 and 1904 respectively the rate has still further fallen to 28·4 and 27·9 per 1,000 population.

TABLE D.—BIRTH-RATES PER 1,000 POPULATION.

England and Wales.		County of Durham.	
Period.	Mean Annual Birth-rate.	Period.	Mean Annual Birth-rate.
1853–57	33·9		
1858 62	34·5		
1863–67	35·3		
1868–72	35·2		
1873–77	35·8		
1878–82	34·4		
1883–87	32·9		
1888–92	30·8		
1893–97	29·9	1893–97	35·6
1898–1902	28·8	1898–1902	35·3
1903–4	28·1	1903–4	35·7

If the birth-rate had remained at the high level of twenty-five years ago there would not have been so much ground for apprehension, for in face of the increased urbanization of the population, with its added dangers to infant life, it could reasonably be argued that a great deal had been achieved in maintaining our infant death-rate at the same level; but when the infant death-rate keeps high in face of a continuous and serious fall in the birth-rate, the outlook is certainly unsatisfactory, for, viewed from a purely business standpoint, there is a progressive decline in income while the expenditure continues high. Such a state of affairs if continued, would in business result in financial ruin; and similarly if the birth-rate of a nation declines, it is essential to the national vitality that the expenditure of infant life should be curtailed, for it cannot be doubted that the renewal of a nation's stock is of far greater importance than the prolongation of adult life.

It has generally been considered that a high birth-rate is productive of a high infant mortality, owing to the increase in the number of young children whose rate of mortality is high; and, if that be so, it is certainly anomalous that in this country now that the birth-rate has declined by nearly 25 per cent, the infant death-rate shows practically no signs of diminution. In order to throw light on the causes of the high infant mortality, it will be necessary to shortly consider what are the diseases most fatal during the first year of life; and in an appendix to the recent report of the Committee on Physical Deterioration there is a very valuable report by Dr. Tatham in which the deaths from various diseases among infants under one year of age are tabulated for a group of urban counties (population 17,818,667) and a group of rural counties (population 4,279,175), both for the quinquennium 1873–77 and for the quinquennium 1898–1902. It is easy to see at a glance not only what groups of diseases are mostly responsible for our infant death-rate, but also what increase or decrease in the mortality from those diseases has taken place, when the two periods are compared.

The table shows that in the urban counties the infant mortality-rate increased from 160·7 in 1873–77 to 164·6 during the period 1898–1902, while in the rural counties on the other hand there was a slight decrease in the figures from 126·2 to 124·9 for the same periods. The difference in the infant mortality-rate in the urban and rural counties is thus seen to be very marked, and exceeded 30 per cent, a greater divergence being noticeable in the later quinquennial period than in that of 1873–77.

The chief causes of death were diarrhœal diseases; atrophy, etc.; premature birth; meningitis, dentition, and convulsions; bronchitis and pneumonia; and tuberculous diseases; these six groups of diseases being responsible for an infantile mortality-rate of 134·2 out of a total of 164·8 in the urban counties during the period 1898–1902, and for a rate of 100·4 out of a total of 124·9 in the rural counties. Comparing the two quinquennial periods, the infant mortality-rate from these particular diseases increased from 130·3 during 1873–77 to 134·2 during 1898–1902 in the urban counties, while in the rural counties they decreased from 101·4 to 100·4 for the same periods. It is to be noted that the proportional mortality from this group of diseases was almost identical, not only during both quinquennial periods, but also for the urban and rural counties, averaging nearly 80 per cent of the total infant mortality.

When the several causes of death are taken into consideration, it will be seen that there was a marked difference in the mortality of several of them in the two quinquennial periods. Dr. Tatham points out that the mortality among infants from epidemic diseases (excepting diarrhœa) is small, and was less in the later quinquennium than in the earlier one; while there was also a general decline in the mortality from syphilis, tuberculous diseases, meningitis, convulsions and teething, bronchitis, and from atrophy, debility and inanition, the decline from these groups of diseases being 22 per cent in both the urban and rural counties. This reduction was, however, counterbalanced by an enormous rise in the mortality from diarrhœal diseases and premature birth, the increase being nearly 70 per cent for both causes of death in the rural as well as in the urban counties. Dr. Tatham points out that more accurate certification in the later quinquennium probably resulted in the transfer of deaths from indefinite to definite headings, but he expresses the opinion that the changes of mortality are so well marked that they approximately represent the variations which have taken place apart from this disturbing influence. Dr. Tatham thinks the increase of diarrhœal diseases is the result of the increasing artificial feeding of children, but he is silent as to the causes of the increase in the mortality from premature birth and of the decrease from other groups of diseases.

The following table is partly compiled from a table in Dr. Tatham's report, but is modified so as to enable better comparison to be made with the administrative county of Durham, which is undoubtedly an urban county, though it is not included in Dr. Tatham's list of urban counties.

Table E.

AVERAGE RATE OF MORTALITY UNDER ONE YEAR PER 1,000 BIRTHS IN A GROUP OF URBAN COUNTIES, IN A GROUP OF RURAL COUNTIES, AND IN THE ADMINISTRATIVE COUNTY OF DURHAM.

Cause of Death.	Rural Counties.		Urban Counties.		Administrative County of Durham.
	1873-77.	1898-1902	1873-77.	1898-1902	1894-98.
All causes	126·2	124·9	160·9	164·8	163·4
Diarrhœa, Dysentery, Enteritis	10·20	16·65	20·5	34·5	26·1
Tubercular Diseases	7·15	4·7	10·5	7·4	8·3
Meningitis, Convulsions ...	23·05	17·65	28·3	20·7	25·1
Dentition	2·05	1·85	3·2	2·5	
Bronchitis, Laryngitis	11·25	11·45	18·4	15·0	25·9
Pneumonia	6·20	8·15	8·7	12·3	
Premature Birth	11·34	18·7	12·9	20·1	20·6
Atrophy, Debility, Inanition ...	30·25	21·25	27·8	21·6	37·5
Scarlet Fever, Diphtheria, Measles, and Whooping Cough	8·2	7·6	11·5	9·9	8·8
All other causes	16·6	16·9	19·1	20·7	11·1

I had intended to lay before you the figures for the county of Durham for at least ten years (1894–1903), but I found that the task of analysing the infant deaths for so long a period was greater than I could complete in the time at my disposal, and the county figures therefore only deal with the quinquennial period 1894–98, and are not therefore quite comparable with the periods dealt with by Dr. Tatham. It will be noted that in the county of Durham the mortality from atrophy, debility, and atelectasis is very much higher than in either group of counties, while the same remark applies in a less degree to premature birth, convulsions, meningitis, teething, and tubercular diseases. On the other hand the county figures compare favourably with the urban group of counties as regards the mortality from diarrhœal diseases, bronchitis and pneumonia, and infectious diseases. The infant mortality-rate for the county of Durham from the six chief groups of diseases, *viz.* diarrhœal diseases; bronchitis and pneumonia; convulsions, dentition, and meningitis; atrophy, debility, and inanition; premature birth; and tuberculosis, was 143·5 per 1,000 births, as compared with 134·2 in the urban group of counties, and 100·4 in the rural group of counties during the period 1898–1902, while if the mortality from scarlet fever, diphtheria, measles, and whooping cough be added, the figures respectively for the county and for the urban and rural groups of counties rise to 152·3, 144·1, and 108, the total infant mortality rates being respectively 163·4, 164·8, and 124·9.

In examining the deaths among young children in the county of Durham during the period 1894–98, some interesting facts bearing on the subject of my address are brought to light. Thus, during that period more than 50 per cent of the total deaths under one year of age were those of children under three months old, the infant mortality rate under three months per 1,000 births being 83·4, as compared with 80 during the remaining nine months of the first year. Then, again, exactly 50 per cent of the enormous mortality among infants under three months was caused by premature birth, atelectasis, and debility.

The number of deaths from overlaying and suffocation was very small, only 103 occurring during the five years among children under five years of age. Of these 102 were under one year of age, equal to an infant mortality-rate of 0·70 per 1,000 births per annum.

If the first year of life be divided into periods of three months, there is a progressive decline in the number of deaths in each successive period, the deaths in the fourth being only about one-quarter what they were in the first period; and this decline is steadily marked during subsequent age-periods up to five years of age.

If the proportion of deaths of young children to total deaths be compared, it will be found that under three months the percentage is 16·5; under one year 32·4; under two years 41·4; and under five years 47·8, or nearly one-half of the total deaths; but more than two-thirds of the total deaths under five years of age occurred under the age of one year, the percentage of deaths to total deaths only being 9·0 between one and two years of age, while between two and five years of age the percentage was only 6·4.

Or if the infant death-rate is calculated on the population living at the different age periods, it will be found that under one year of age the death-rate was 201 per 1,000; under two years it was 136; and under five years 65·7; but between one and two years the rate per 1,000 living fell to 63·2, and between two and five years to 14·7, which is considerably less than the total death-rate for the county at all age periods. It is evident, therefore, that the period between two and five years is not characterized by a high mortality-rate, the deaths of young children (41·4 per cent of the total deaths) mostly occurring under two years of age.

The following table shortly sets forth the facts I have just stated;—

TABLE F.—ADMINISTRATIVE COUNTY OF DURHAM, 1894-98.

	Percentage to Total Deaths at all ages.	Death-rate per 1,000 living at specified age-periods.
Under 1 year	32·4	201
„ 2 years	41·4	136
„ 5 „	47·8	65·7
Between 1 and 2 years	9·0	63·2
„ 2 „ 5 „	6·4	14·7

Although I have no complete figures as to the infant mortality in the county of Durham prior to 1893, I find that the infant death-rate for the administrative county per 1,000 living during 1894–98 compares unfavourably with that for the registration county during the periods 1851–60 and 1861–70. This is especially unsatisfactory when it is remembered that the registration county includes the populous boroughs of Sunderland, South Shields, and Gateshead, which are excluded from the administrative county, and in which the infant mortality during 1851–70 was excessive.

As has already been stated, the chief cause of the infant mortality-rate in England and Wales remaining practically stationary when the total death-rate has persistently declined, is the large and increasing mortality from diarrhœal diseases and premature birth; for it is evident from Table E that there has been a general decrease in the proportion of deaths from the other chief infantile ailments, and if the mortality from these two groups of diseases is to be reduced, it is especially important that the causes of the increase should be carefully studied. The causes of diarrhœa have certainly received more attention than those of premature birth, owing especially to its epidemic prevalence being limited to a comparatively short period of the year, and also because its epidemicity is very largely influenced by the climatic conditions prevailing during that period. In fact a study of the diarrhœal mortality of England and Wales enables one with great accuracy to determine in the majority of past years the character of the weather which prevailed, for it is well known that in cold, wet summers the mortality from diarrhœal diseases is considerably below the average, while in hot, dry summers exactly the reverse obtains. You will all remember how extremely wet and cold was the summer of 1902, and that in that year the diarrhœal death-rate was one of the lowest recorded for England and Wales and for the county of Durham. On the other hand, last year was dry and fairly warm, and in consequence the diarrhœal death-rate, compared with 1902, was more than twice as high for England and Wales, and three times as high for the county of Durham. Moreover the marked fluctuations in certain years in the infant mortality-rate are almost entirely accounted for by the rise and fall of the diarrhœal mortality. Thus, the year 1902, which had a very low diarrhœal death-rate, was also notable for one of the lowest infant mortality-rates on record, while on several occasions during the past decennium exceptionally high infant and diarrhœal death-rates occurred in the same year. I find on referring to the mortality statistics of the county of Durham for the quinquennial period 1894–98, that the infant mortality-rate varied from 149 in 1884 to 179 in 1898, a difference of 30 per 1,000 births. For the same two years the diarrhœal death-rate under one year of age varied from 11·9 to 42·7, or a difference of 30·8 per 1,000 births, so that the wide range in the infant mortality-rate for those years was entirely accounted for by the fluctuation in the deaths from diarrhœal diseases. For many years past diarrhœa has been considered a filth disease, dependent on an organism whose favourite habitat is an organically polluted soil; and it is therefore somewhat discouraging that after so much has been done to improve the sanitary surroundings of the dwellings of the people, this so-called filth disease should exact a higher toll on infant life than it did thirty years ago. It is evident that other causes are at work which counteract the effects of improved sanitation—causes probably connected with the social and domestic life of the people, and also influencing unfavourably the mortality from other infant ailments than diarrhœa—and in using his best endeavours to detect and combat these the Medical Officer of Health will be performing one of his most important duties, and one which, if successful, will be of the utmost advantage to the physical and moral welfare of the country.

In venturing shortly to consider the conditions which operate adversely on infant mortality in this country, I trust I may claim your indulgence if I am becoming wearisome.

Broadly speaking, the conditions operating may be divided into those affecting the child before and during delivery, and after birth. It is evident that deaths resulting from such causes as premature birth, atelectasis, inanition, and accidents and diseases of parturition, are very little, if at all, dependent on external conditions after birth, and that if such causes of death are capable of being prevented or materially reduced we must direct our attention to conditions likely to affect the child before birth, and to the social and moral environment of the parents. On the other hand, such diseases as convulsions, meningitis, diarrhœa, gastritis, marasmus, malnutrition, atrophy, and acute lung affections are probably the result to no small extent of circumstances adversely affecting the child after birth, and I propose first to refer to these circumstances as being less in dispute and more easily remedied than those affecting the child before birth.

That differences in social position influence infant mortality is so evident that it need only be mentioned, for it cannot be disputed that the comforts and surroundings of the well-to-do must be more suitable to healthy infant life than are the conditions associated with the general population, even if the laws of health are equally observed in each instance. As a matter of fact, excessive infant mortality is entirely confined to the working classes and the poor, and even at the millennium I am afraid there will still be a considerable difference between the infant death-rate of Belgravia and Whitechapel, though I have no doubt that among all classes of our population the infant mortality may be reduced.

Among other recognized causes acting adversely on infants after birth may be mentioned birth-rate, heredity, illegitimacy, insurance, poverty, over-crowding, insanitary conditions, employment of women, improper feeding, and neglect and inexperience of the mother.

That a high birth-rate is not conducive to a low infant mortality is an undoubted fact, partly because of the large proportion of the population living at an age when the mortality is high, and because in this country a high birth-rate generally occurs among a class of population whose surroundings and social habits are not favourable to healthy infant life. Theoretically, a continued high birth-rate ought after a few years to favour a low death-rate, owing to the fact that the population would then contain a large proportion of young people who had survived the dangers of infancy and had reached an age period when the mortality is low; but this effect of a high birth-rate is in practice generally counterbalanced by adverse conditions of life of the population. If, however, these adverse conditions can be removed, as doubtless they largely can, the value to the country of a high birth-rate becomes greatly enhanced. Heredity and illegitimacy, while undoubtedly influencing the infant death-rate, may to some extent be classed among the causes operating before the birth of the child, though the high death rate among illegitimate as compared with legitimate children is undoubtedly for the most part the result of neglect of the child after birth. In a recent table, Dr. Tatham has shown that in 1902 the mortality was twice as high in London and one and a half times as high in a group of rural counties among illegitimate children, as compared with children born in wedlock, and without a doubt the greater part of this excessive mortality is preventable. As regards infant insurance it is very difficult to obtain accurate information as to its effect on mortality. Without doubt the practice of insuring children has greatly increased of recent years, and some Medical Officers of Health have strong views as to its prejudicial effect on mortality. Personally, I am inclined to think that insurance does not appreciably affect the child mortality, and that the rise in the infant death-rate is not attributable to it, except possibly in the case of illegitimate children; but I do think that no system of infant insurance by which a profit results to the child's guardians by its death should be allowed, and the law should be so altered that a child's life could not be insured during the first two years of its existence for more than the cost of burial expenses.

Poverty is undoubtedly a factor of a high infant death-rate, but it cannot be considered the cause of the infant mortality rising from 142 during the period 1881–90 to 154 in the following decennium, when wages were higher, food cheaper, and pauperism less than in any previous period. Moreover, there is evidence to show that in times of trade depression, especially among those industries where women are employed, there is a reduction of infant mortality.

Speaking generally also overcrowding has diminished of late years, as the following table taken from the last census report shows:—

TABLE G.—TENEMENT STATISTICS (ENGLAND AND WALES).

Rooms in Tenements.	Percentage of Total Population in each group of tenements.		Average occupants per room.	
	1891.	1901.	1891.	1901.
One room	2·2	1·6	2·23	2·02
Two rooms	8·3	6·6	1·73	1·64
Three ,, ...	11·1	9·8	1·42	1·36
Four ,, ...	23·5	21·9	1·16	1·12
Five ,, and over ...	54·9	60·1	?	?

Moreover, if the Registrar-General's definition of an overcrowded room be taken, *i.e.* more than two persons per room, the census returns show that for England and Wales the proportion of overcrowded tenements declined from 32·2 per cent in 1891 to 26·5 in 1901 in one-roomed dwellings; from 26·4 to 22·4 in two-roomed dwellings; from 15·9 to 13·1 in three-roomed dwellings; and from 5·8 to 4·7 in four-roomed houses. In the county of Durham there was a considerable reduction in the number of one-roomed dwellings in 1901, as compared with 1891, but the decrease in the number of two-roomed tenements was only about 0·6 per cent, while on the other hand there was a marked increase in the number and proportion of three and four-roomed tenements. In England and Wales the proportion of tenements of less than five rooms to total tenements was 468 per 1,000, the maximum proportion being in Durham (757) and Northumberland (777). Although it is evident that overcrowding has decreased in the country generally, my experience is that it has increased in the coal-mining districts of the county of Durham. It is a matter of common knowledge to the people living in such districts that the overcrowding is excessive, and the fact is adverted to in the following passage of the census report. "Speaking generally it may be noted that in those counties in which coal-mining is a prevailing industry much overcrowding prevailed; for example, in the rural districts of Chester-le-Street, Lanchester, and Easington in the county of Durham, the proportions of overcrowded persons to total population were as high as 37, 38, and 39 per cent respectively." Bad as such a state of affairs must be to both adults and children, I am not at all sure that it fully represents the evil, for I have reason to believe that not infrequently the distributors and collectors of the census papers were unaware of the fact that tenements were sub-let or were occupied by more than one family, with the result that a certain proportion of the population was left out of the enumeration. The overcrowding of population in the mining districts of the north of England is largely the result of the—in my opinion unfortunate—custom of the colliery owners providing the dwellings for the miners. On the ground of expense, the owners endeavour to reduce their expenditure on such dwellings as much as possible, and, I regret to say, in some cases they actually encourage overcrowding by their want of discrimination in the allocation of the larger families to the more commodious dwellings. Unfortunately, too, in some districts the uncertain life of the colliery and the difficulty in obtaining building sites not liable to subsidence, prevent the deficiency in houses being supplied by private enterprise, while for these and other reasons into which I need not enter to-day, but with which I know many of you are well acquainted, the sanitary authorities have so far failed to exercise their powers to erect workmen's dwellings under Part III. of the Housing of the Working Classes Act, 1890. Personally, I am convinced that a serious factor in the continued high infant death-rate in the county of Durham is the gross overcrowding in the mining districts, which is being aggravated rather than reduced.

That the sanitary condition of this country has undergone a marked improvement since 1875, and especially during the last twenty years, is an acknowledged fact, and is emphasized in the Report of the Committee on Physical Deterioration in the following words: "Testimony is almost unanimous as to the improving conditions under which the denizens of large towns are called upon to exist. Rookeries are being displaced, enclosed yards opened out, cellar dwellings and back-to-back houses are disappearing. One-roomed, two-roomed, and three-roomed tenements, with more than two, four, and six occupants respectively, are diminishing. . . . Further, the water supply has been enormously improved both in purity and quantity; legislation has greatly extended the liabilities of owners and occupiers under the Public Health Acts and the Housing Acts, and under the said series of Acts wide powers have been placed in the hands of local authorities for cleansing unhealthy areas, closing insanitary houses, preventing overcrowding, abating nuisances, and enforcing generally a higher standard of sanitation. Machinery exists for the inspection and purification of cowsheds and dairies, pauperism has diminished, better and more complete accommodation is provided for the sick poor, the conditions of labour touching young persons and women in factories and workshops have been greatly ameliorated, and all the children of the State in workhouse schools, reformatories, and industrial institutions are started in life under far better auspices than formerly."

Speaking for the county of Durham, I can certainly vouch that the above remarks apply generally to its urban and rural districts, though in many respects, unfortunately, much more requires to be done than has up to the present been accomplished.

The effect of the employment of women on the infant mortality is undoubtedly prejudicial, and in the majority of towns and districts where the proportion of women engaged in industrial occupations is large, the infant death-rate is high. Dr. Reid, the County Medical Officer for Stafford, showed a few years ago that the infant mortality varied in the Potteries directly with the proportion of married women employed, and in the Lancashire cotton districts there appears to be a similar relationship. On the other hand there are many instances where the infant death-rate is lower in districts with a large proportion of women employed, than in other districts where the percentage is small. Thus in the north of England, and especially in Durham county, the proportion of women engaged in occupations is relatively small (in Durham in 1901 only 17·5 per cent of the female population was so engaged, and only 17 per cent of these were "married or widowed") and yet we have unfortunately to deplore an infant mortality much above the average not only of the country, but often of other industrial counties where the proportion of women engaged in industries is much higher. Before the actual effect of the employment of women on the infant mortality can be determined we must have exact information not only as to the kind of occupation of the women, but also as to the sanitary surroundings of selected areas; but it is evident that as the percentage of women engaged in manufactories has progressively declined at each of the last three census enumerations, their employment cannot have been responsible for the rise in the infant mortality since 1890. Neither poverty, overcrowding (except perhaps in the mining districts of the north of England), insanitary surroundings, nor the employment of women in factories is therefore capable of explaining the rise in the infant mortality rate shown in Table E, and which undoubtedly occurred throughout the country during the last decade; and suspicion is therefore directed to the improper feeding and management of infants as being the chief cause of the high mortality among them.

Improper feeding and management has always been regarded as a factor in our infant mortality, and the fact that diarrhœal diseases are especially fatal among hand-fed children, has on many occasions been demonstrated. There is a consensus of opinion among medical men, health visitors, and others with opportunities of judging, that artificial feeding of infants has very considerably increased during the past twenty years; and under the best conditions the substitution of an artificial diet for the infant's natural food could not be expected to be advantageous. But when we know that the substitutes for mother's milk are chosen without any regard for, or knowledge of, the infant's requirements in the way of food, and that indigestible and non-nutritious and unwholesome materials form the staple diet of a considerable proportion of our infant population, can any other result than illness and death be looked for among the unfortunate recipients? It is quite possible that at the present time more mothers than was the case fifty or even twenty-five years ago are unable to properly suckle their infants, owing to the greater stress of life and to the more artificial conditions under which we live; but it is also certain that a much larger proportion are physically able to provide their infants with natural food, but through laziness, love of pleasure, or indifference, have resort to hand feeding. Pure cows' milk, properly diluted and sweetened, is recognized as the one food most nearly approaching the natural food of an infant, but my experience in the north of England, (and I am afraid the same applies to most other populous parts of the country), is that pure cows' milk forms but a very small proportion of the food of the hand-fed children of our industrial population. As a general rule condensed milk is the chief food of infants of the working classes in Durham county for the first few months, where they are hand fed, partly because it can be conveniently obtained, and also because it is cheap, and keeps better than ordinary milk. In my opinion, however, it is a most unsuitable food, for many reasons. In the first place the sweetened varieties which are most commonly used contain over 40 per cent of cane sugar, a substance which for the first two or three months of life an infant can digest only with difficulty. Secondly, the directions on the labels as to the amount of dilution necessary are invariably wrong, and, if followed, result in a weak, sugary liquid containing far too little proteid matter and fat to render it suitable as a food for infants. Thirdly, many of the brands of condensed milk sold, especially to the poor, are made from machine-skimmed milk, and therefore are deprived of practically the whole of the milk fat, one of the most important constituents of milk; while a fourth reason against the use of such milks is that the process of condensation not only renders the proteids less digestible and deprives the milk of its freshness and vitality, but also causes a precipitation of some of the mineral constituents, which are not redissolved when the milk is again diluted. So far as I can see, the only possible point in favour of the use of condensed milk is that it is rendered sterile in the process of manufacture; but in the majority of dwellings where it is used that advantage is destroyed within a very few hours of the tin being opened. Boiley, potatoes and gravy, and many other mixtures are often considered suitable foods for even very young infants; but I am firmly convinced that a very large proportion of infantile ailments and mortality is attributable to the growing use as food of weak dilutions of skimmed and unskimmed sweetened condensed milk—a material absolutely unsuited to the infant economy. The experience of medical men and others as to the increase in the artificial feeding of infants, is supported by a reference to Dr. Tatham's table of infant mortality in the urban and rural groups of counties, for, as I have already pointed out, not only is the diarrhœal death-rate shown to have increased by nearly 70 per cent on comparison of the period 1898–1902 with that of 1873–77, but stomatitis and diseases of the stomach, as well as rickets, show an equally large increase when the same comparison is made, and all these diseases are recognized as being more or less directly connected with improper feeding. It is also probable that a large proportion of the deaths from such ill-defined causes as atrophy, mal-nutrition, marasmus, convulsions, and debility are the result of improper feeding or other neglect.

Apart from the feeding, the neglect of infants—rarely wilful in my experience, but almost invariably owing to ignorance or indifference—largely influences mortality. The importance of cleanliness, not only of the dwelling, but of the infant's clothing and bedding and feeding bottles, by quite a large proportion of the people is often entirely overlooked; the clothing is generally unsuitable, the infants are allowed to crawl on a dirty floor, and in fine weather on the often still more filthy ground outside the dwellings, and when they become querulous or ill, the usual panacea is the abominable dumb-tit or one of the many dangerous soothing syrups. One of our members, Dr. Carruthers, of Southwick, in his last annual report, in discussing the infant mortality which is always excessive in his district, in no way exaggerates in the following remarks on the use of the dumb-tit: "The use of the dumb-tit now so general is greatly to be deprecated. It is an evil invention. To afford a transient solace to an ailing and querulous child it is not an uncommon incident for the so-called comforter to be dipped in the contents of a tin labelled 'condensed milk' before it is put into the infant's mouth. Inward distress naturally follows or is intensified. The tit falls on the floor and there becomes coated with an abundant assortment of abominations, it gets a cursory wipe and is again shoved into the mouth of the child. And the mother wonders why the youngster does not thrive."

A large proportion of the mortality from bronchitis and pneumonia among infants is also undoubtedly preventable. Much of it no doubt results from the dampness, draughtiness, and other defects of dwellings, but much of it is also caused by the mothers carrying their infants in all weathers from warm and stuffy rooms into the cold air, in the course of their shopping or of their gossiping visits to their neighbours. When one considers how often in the feeding and management of infants, every law of elementary and domestic hygiene is persistently broken the wonder is that more than one child in every six born does not die during its first year.

In a series of articles in the *Times* on the subject of this paper, the opinion is expressed that the continued high infant mortality, in spite of the many sanitary and social improvements, is to be in part attributed to school attendance. It is pointed out that until the advent of compulsory education "the eldest girl of a poor family was practically the nurse; and in this capacity not only were her own maternal instincts and her love for children developed and brought into activity, but she also gained a certain amount of knowledge and experience as to child treatment. In the present day her compulsory school attendance takes her away from the younger children, and she is apt to regard them as little better than nuisances; while the mother, deprived of her elder girl's help, and frequently either compelled to work or inclined to idleness or gossip, is increasingly prone to neglect the first duties of maternity." I am inclined to agree with this view, and also think that the increasing carelessness and deficient sense of responsibility among the younger women of the present day is largely the result of the general influence of our modern school system, and of the literature for which schooling has set up a demand. Similarly, the increasing disinclination of women for domestic service (the proportion of women in domestic service has declined from 14·2 in 1891 to 12·2 in 1901) is attributable to our compulsory education, and is not a subject for congratulation. The laws of health and domestic hygiene are taught in our secondary and other schools to a greater extent than ever before, and the ignorance on the subject is therefore due to indifference rather than to want of opportunity. It is obvious therefore that instruction in the subjects should be compulsory in all elementary schools, and not be relegated to the optional classes of continuation or secondary schools. Such instruction can, however, only be properly given by teachers who are themselves well grounded in its general principles, and unfortunately only a small proportion of the teachers are so qualified. It is therefore important that every Education Authority should without delay give facilities for their elementary school teachers obtaining suitable instruction in elementary sanitation and in domestic and school hygiene, so that they may become qualified to impart the necessary information on those subjects to the children attending the elementary schools. Fortunately the importance of such instruction is now recognized by the Board of Education, and only a fortnight ago an important and well-attended conference on school hygiene was held in London, so that there is every hope that in the near future the systematic teaching of hygiene will be a recognized part of the curriculum of our elementary schools.

To get in touch, however, with the mothers of to-day, and bring to their notice in a practical manner the proper methods of feeding and managing their children, I know of no better means than the appointment of women health visitors. For many years I have advocated the appointment of properly qualified women to visit at the homes of the people, and I am glad to say that similar advice has been given by a large proportion of the Medical Officers of Health in my county. In many of the large towns and in some of the counties such women inspectors have been appointed, and with excellent results in every case in which I have made enquiry. In the north of England lady health visitors have been appointed in Stockton and Middlesbrough. and I understand that they do most valuable work, and that their services and instruction are greatly appreciated by the people whose houses they visit. My own County Council are about to appoint two ladies, as an experiment, who will act both as Health Visitors and Inspectors of Midwives. I have every hope that in the discharge of their duties they will receive the support of local authorities and the medical profession, and that their services will be appreciated on all sides and their work bring forth good fruit. I also think that the proper administration of the Midwives Act will result in the reduction of the infant mortality; for the Supervising Authority through the agency of the Medical Officer of Health and properly qualified Inspectors can exercise an educational influence in matters of hygiene on the midwives, who would then be more fitted to advise their patients in matters relating to the welfare of the infant. At present, as you know, the ideas of many midwives as to cleanliness and the feeding and management of infants are, to put it mildly, not altogether satisfactory, and I see no reason why they should not disseminate sound instead of wrong instructions on such important matters to mothers at a time when proper information is of paramount importance.

In view of the alarming fall in our general birth-rate, it is essential that our high infant mortality-rate should be reduced, and I am convinced that by judicious and systematic teaching of hygiene in the elementary schools, by the employment of women health visitors, and by the judicious weeding out of ignorant and ill-educated midwives, a very large reduction can be effected. The medical profession itself can also do much more good than it has done in the past towards overcoming the ignorance which exists as to infant feeding and management, for I am afraid many medical men bring children into the world without giving any directions for their future welfare.

As to the causes operating to the prejudice of the child before birth, I shall say but a few words. Early marriages, physical weakness on the part of one or both parents, insanitary surroundings during the puerperal period, the employment of women, and intemperance, all contribute their quotum to the enormous number of deaths from premature birth, atelectasis, and debility, and the remedies are obvious but not easy to carry into effect. It has also been suggested that the large increase in the deaths from premature birth is in part the result of unsuccessful means taken to prevent conception or to procure abortion. It is certain that the reduction in the birth-rate is almost entirely caused by preventive measures against conception, and many of the newspapers, especially those published weekly and on Sundays, teem with advertisements on this subject, and containing scarcely veiled suggestions for the destruction of unborn children. Those advertisements would not appear if they did not pay, and they undoubtedly indicate that very many women endeavour to escape the responsibilities of maternity by methods which are often criminal and are always morally indefensible. It is certain that the practising of such methods must be injurious to the female reproductive organs, and where unsuccessful must often seriously interfere with the vitality of the embryo, and it is therefore highly probable that the increase in the deaths from " premature birth " is in no small degree due to the more frequent employment of such unnatural artifices. The subject is an unsavoury one, but to grapple with the evil it must be boldly faced, and the first step towards overcoming it is to promote legislation for the suppression of the objectionable advertisements to which I have referred. An increase in the evil is undoubtedly evidence of moral degradation, and we have only to refer to history to know that physical deterioration and ruin tread rapidly on the heels of a nation's moral degeneration. From the Report of the Committee on Physical Deterioration it appears that at present there is no marked evidence of our physical decline, but that is no reason why we should neglect to take steps to remedy the social and sanitary evils to which I have referred, and which cannot continue to increase without seriously affecting both the moral and physical welfare of the nation.

In concluding, I must thank you for your patience in listening to my somewhat long address, of the imperfections of which I am only too conscious. The subject is a very wide one, and I have only very cursorily referred to many important matters intimately associated with it, but I trust that I have shown that not only is our infant mortality an evil of considerable magnitude, but that very much of it is easily preventable.

THE EFFECT OF FEEDING WITH MILK FROM IMMUNIZED COWS.—Jemma reported at the Italian Congress of Internal Medicine at Rome (Oct. 24–27, 1904) that the serum of healthy infants of sound parents does not agglutinate the tubercle bacillus even at a dilution of 1 to 1. If the parents are tuberculous a very weak agglutination is exceptionally observed. Healthy infants fed for several months with milk from immunized cows, acquire the agglutinating property, usually for dilutions of 1 to 5, but occasionally of 1 to 10. Infants of tuberculous parents, under the same conditions, acquire an agglutinating property of 1 to 10 or 1 to 20. This property is gradually lost after suspension of the milk, persisting highest and longest in the children of tuberculous parents.

R. B. Pallieri describes (*Gaz. degli Ospedale*, No. 136, 1904) a number of experiments which demonstrated that the muscle plasm of animals artificially immunized against tuberculosis possessed bactericidal and antitoxic properties in respect to the tubercle bacillus. The research was conducted at Maragliano's Institute for Infectious Diseases at Genoa.

SCHOOL SANITATION, AND THE DUTIES OF SCHOOL MEDICAL OFFICERS.*

By ALFRED GREENWOOD, M.D., D.P.H.,
Medical Officer of Health for Blackburn.

Having been requested by this Branch of the Incorporated Society of Medical Officers of Health to read a paper on the above subject, it is my pleasing duty to offer these few remarks, which I have divided into the following headings:—

I. Duties of school Medical Officers.
II. Sanitary conditions of school buildings.
III. Infectious diseases in schools.
IV. Medical inspection of school children.
V. Recommendations for the future.

I trust that I shall be pardoned if I make frequent references to Blackburn, as all my experience in school hygiene since the new Education Act came into force has been gained in that town.

I. Duties of School Medical Officers.

Notwithstanding certain contrary opinions, I believe it is generally conceded that questions of school sanitation and medical inspection of school children should be under the supervision of the Medical Officer of Health, except, perhaps, in large cities where a medical gentleman gives the whole of his time to this special work in schools.

I am sure that the custom of allowing a medical man in general practice to carry out these duties independently of the Medical Officer of Health will, in many cases, result in overlapping of work and friction between these two officials.

The Medical Officer of Health has already responsibilities in connection with school buildings, and with those diseases amongst school children which are compulsorily notifiable. He already has a special knowledge of sanitation, and, if a whole-time official, he has no conflicting interests with other medical gentlemen who are in private practice.

Moreover, the Health Officer has an inspectorial staff for sanitary purposes, and the advantages of the Medical Adviser to the Health and Education Committees being the same official are obvious.

Whether or not a certain portion of the medical inspection of school children should be carried out by a medical practitioner acting under the direction of the Medical Officer of Health, or by a whole-time assistant to the Medical Officer of Health, are other questions upon which varying views are held.

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* Read before the North-Western Branch of the Incorporated Society of Medical Officers of Health, at Manchester, on March 17, 1905.

Many of you may remember that in the *British Medical Journal* of January 14, 1905, the editors expressed gladness in finding that the principle that the medical inspection of schools should be conducted not by special whole-time officers, nor by Medical Officers of Health, but by medical men engaged in ordinary family practice in the neighbourhood, was gaining ground.

In the same leaderette it was stated that by medical inspection was understood the supervision of the health of the school children, in relation especially to infectious diseases, over-pressure, and underfeeding.

Reference was also made to a leading article in the *Times* of January 10, in which the following statement was made: "We are strongly impressed with the belief that, while the Medical Officer of Health should be the school authority in all sanitary matters, and should be supreme over drainage, ventilation, lighting, cubic space, and similar matters, yet that when he is restricted to his official work it would usually be better to employ a practitioner as the visiting Medical Officer of the school in relation to any questions in which the health of individual children might be concerned. Watchfulness over this aspect of their activity would be best maintained by a medical man who was accustomed to observe the beginnings of illnesses in single patients rather than the conditions favourable to its extension in a community."

You will notice that this paragraph presupposes considerable experience and ability, especially in dealing with epidemics, and yet in the same article it is stated that the work would be valuable for young practitioners. To say the least, these two statements are paradoxical.

Moreover, it seems to me that in taking measures against the spread of scarlet fever and diphtheria in schools, a knowledge of the beginnings of these infectious illnesses in individual scholars, without a knowledge of the conditions favourable to their spread in a district, would not lead to very successful results.

I fail to see why Medical Officers of Health should not be responsible for all infectious diseases in schools. No other official possesses the same information regarding the existence of all notifiable infectious diseases at any given time. Also the Medical Officer of Health advises either school closure or the exclusion from school of individual scholars when necessary.

Again, this official has more opportunities of investigating the home life of school children.

The suggestion of our President, Dr. Wilkinson, that the work of the School Attendance Officer should be combined with that of the Sanitary Inspector, is an admirable one. This can only be done where the Medical Adviser to the Health and Education Committees is the same gentleman. In Blackburn the Superintendent School Attendance Officer reports to the Medical Officer daily, and a large amount of useful information is obtained in this way.

Nevertheless, certain medical duties must fall upon some one, whoever that official may be.

The following is a list of such duties which are being carried out in Blackburn at present, although these will require further development in the future:—

Duties performed as Medical Officer to the Blackburn Education Authority.

1. Supervision of the sanitary condition of school buildings. A detailed report has been prepared on this matter dealing with every possible branch of sanitation as affecting school buildings.
2. Supervision over all infectious diseases occurring in schools. A detailed report has been prepared on this subject.
3. Periodical visits to all the schools of the borough in connection with the two duties mentioned above.
4. Examination of all school children referred by the School Attendance Officers as to their fitness or otherwise for school.
5. Medical inspection of school children when possible, and where demanded through special circumstances. For example, at present I am conducting an investigation into the hearing of school children, in order to trace the varying effects of granite sets and wooden sets in the streets immediately adjoining the schools.
6. The examination of epileptic and mentally or physically defective children. A list is being made of these, so that they may be taught in the special school which will shortly be erected.
7. The examination and certification of children who are deaf or blind.
8. The examination and certification of children committed by the magistrates to an Industrial School.
9. The preparation of a monthly report for the Education Committee.
10. The preparation of special reports on any points as desired by the Committee.
11. Attendance at Committee meetings when desired.

II. SANITARY CONDITIONS OF SCHOOL BUILDINGS.

After being appointed Medical Officer to the Education Committee in October, 1903, I was requested in that capacity to prepare a detailed report upon the sanitary conditions of the fifty-two public elementary schools in the borough. A spot map was prepared showing the name and exact locality of each of these schools, which were then examined separately in detail covering every possible sanitary condition. Also a plan drawn to scale (30 ft. to 1 in.) was prepared for each school. In describing the schools *seriatim* the following points were noticed: A brief description was first given dealing with the *external* conditions, such as state of buildings, playgrounds, sanitary conveniences, etc. Then measurements and observations were recorded of the *internal* conditions, such as heating, natural and artificial lighting, cloakroom accommodation, walls, floors, etc. Each room was then dealt with separately in respect to floor space, cubic space, ventilation (inlets and outlets), and lighting per scholar. From these, one was enabled to make special recommendations for each school, as well as general recommendations applicable to all the schools. One hundred and fifty-nine samples of school air were analysed by Pettenkofer's method for the amount of carbon dioxide gas, and the air of schools was also examined bacteriologically for the *number* of micro-organisms growing on agar and gelatin plates.

Copies of this report were forwarded to the managers of all the schools, and their observations upon the various recommendations were requested. These replies and the report itself were fully discussed subsequently by the Education Committee.

Finally, it was resolved: "That the attention of the school managers be called to the recommendations in the Medical Officer's report, and that they be requested to carry out such recommendations as early as possible. That the managers be also informed that the Committee have instructed the Medical Officer to report on his recommendations at the end of six months, by which time the Committee trust that the different matters recommended will be completed."

It was further resolved that the Medical Officer's recommendations be adopted as follows: "(*a*) That a thermometer be placed in each schoolroom, and the temperature recorded on charts to be provided for the purpose, the record to be taken at 9 a.m. and immediately before the afternoon interval; (*b*) That a card be placed in each schoolroom giving instructions as to ventilation, and stating the number of scholars which it is desirable shall not be exceeded in each room."

The above particulars are evidence of the excellent spirit in which the Blackburn Education Authority have entered upon the important duties placed upon them by the Education Act, although I regret to state that no resolution was passed requiring a monthly scrubbing of schoolroom floors.

An objection was raised that it would not be practicable to wash school floors each month owing to the fact that so many schools were used on Sundays. Another objection was expense.

I still hold the opinion that this very important measure ought to be carried out.

Although the period of six months in which alterations to the schools in Blackburn should be carried out has not yet expired, at about one-fourth of these buildings satisfactory alterations have been made.

A special investigation into the sanitary conditions of the schools of a district, resulting in definite recommendations for each building, is a measure which will not need repetition beyond an ordinary inspection in order to ascertain whether or not the alterations have been carried out satisfactorily. And the time previously spent in that direction can then be occupied in a closer attention to the personal conditions of the scholars.

III. INFECTIOUS DISEASES IN SCHOOLS.

Last year, in answer to an instruction from the Education Committee, an investigation was made into the question of epidemic sickness as affecting the elementary schools of Blackburn, with special reference to the cause of the prevalence and periodical recurrence of measles, scarlet fever, and diphtheria. The general conclusion arrived at was that the spread of these three diseases was certainly favoured by school attendance, and that this was the experience of a large number of other towns. As a result of these inquiries, and carrying out the principle that our first line of defence must depend upon a certain knowledge of these diseases and prompt action on the part of the teachers, the following hints were printed on large cards, and one copy was fixed in each classroom of every school in the town:—

COUNTY BOROUGH OF BLACKBURN.

INFORMATION FOR SCHOOL TEACHERS WHICH WILL ASSIST IN PREVENTING THE SPREAD OF INFECTIOUS DISEASES.

Ventilation.

1. The means of ventilation which are available should be used.

2. Windows should be opened as much as possible. An intelligent teacher will soon discover to what extent the windows can be opened without draught. There is often a smaller sense of draught from widely-opened windows than from slightly-opened windows, especially if the outside air is not too cold.

3. If a strong wind is blowing, and windows are placed on opposite

sides of the room, it is preferable to open the windows on the leeward side, *i.e.* the side opposite to which the wind is blowing. If the wind is not strong, one or more windows may in addition be opened at the top of the windward side, *i.e.* the side on which the wind is blowing. In warm weather, with little or no wind, the conditions are unfavourable to ventilation, and accordingly all ventilators and windows should be freely opened. In cold, and especially in windy weather, the conditions are unfavourable to ventilation, and the opening of windows may therefore be moderated.

4. All air gratings, Tobin's tubes, Sherringham valves, etc., must be kept free from dust, paper, and other articles, and must not be covered by maps, books, flower-pots, etc., which may hinder the free inflow of air.

5. Every door, window, and other ventilation opening must be opened widely during playtime.

6. All assistant teachers must carry out these instructions.

Infectious Diseases.

1. If any child is found to be suffering from any of the following symptoms, he or she should be sent home at once, and reported without delay to the Medical Officer of Health :—

(*a*) *Sore throat.*—The child may be suffering from diphtheria or commencing scarlet fever.

(*b*) *Severe cold*, with sneezing, running from the eyes and nose. The child may be suffering from the first stage of measles. These symptoms should be looked for, particularly when measles is prevalent.

(*c*) *Prolonged fits of coughing*, especially if ending in expectoration of mucus or, as sometimes is the case, in vomiting. The child may be suffering from whooping-cough.

(*d*) *Peeling of skin* on hands, or neck, or other parts of the body. Such peeling frequently occurs in the later stages of scarlet fever.

(*e*) *Feverishness.*—Every teacher should know how to take the temperature of a child. If the temperature in the armpit is above 99° F., the child should be regarded as feverish.

(*f*) *General rash.*—Rashes are generally indicative of infectious diseases, especially of scarlet fever, measles, German measles, and small-pox.

2. Every child whose nose, eyes, or ears are constantly discharging, or who has ringworm, scabies, or any other skin disease, should be reported to the Medical Officer of Health, and should not be re-admitted to school until certified by the medical attendant to be cured or undergoing such treatment as will prevent the disease spreading to others.

3. Paper should, when possible, be substituted for slates. When slates are used each pupil should have his own, and they should also be washed with disinfectants frequently.

4. Every teacher, by co-operating in the above manner, will undoubtedly benefit both sick and healthy children, and also do much to prevent the necessity for school closure.

5. The Medical Officer of Health is willing at all times to give advice to the teachers regarding the above.

ACUTE INFECTIOUS DISEASES.

Disease.	Duration of Infection.	Date at which Patient may resume School.	Duration of Quarantine of Children exposed to Infection.
Diphtheria ...	At least 8 weeks	When certified free from risk of infection	2 weeks
Scarlet Fever ...	5 to 8 weeks ...	When certified free from risk of infection	2 weeks
Measles ...	8 weeks ...	About 4 weeks from beginning of rash	4 weeks for children attending the infant school and for children who have not had Measles
German Measles	2 to 3 weeks ...	3 to 4 weeks from beginning of rash	2 weeks
Whooping Cough	6 weeks from beginning of whooping	In about 8 weeks if the spasmodic cough has disappeared	3 weeks
Mumps	About 3 weeks from onset	4 weeks	3 weeks
Typhoid Fever	4 to 5 weeks ...	When strong enough	3 weeks
Small-pox and Chicken-pox	4 to 5 weeks ...	When every scab has disappeared	3 weeks

It is desirable that the number of scholars in this room should not exceed.........

ALFRED GREENWOOD, M.D., D.P.H.,
Medical Officer of Health and Medical Officer to the Education Committee.

Public Health Office, 51, Ainsworth Street,
Blackburn, *October* 20, 1904.

IV. MEDICAL INSPECTION OF SCHOOL CHILDREN.

I will at once say that I believe it is impossible for the Medical Officer of Health to carry out an efficient medical inspection of school children in his district, especially in a large town. But, in default of suitable medical assistants being provided, he can do something in this matter, and however little this may be, it is better than nothing.

The devotion of one or two mornings per week to the personal inspection of children at school on proper lines will form a sound basis for a future extension of this work, and the results so obtained will form a sufficient reason for requesting further medical assistance from Local Education Authorities.

In this, as in other public health questions which impose new duties upon Medical Officers of Health, it is advisable that changes and new demands should not be made too suddenly. The growth of this work will necessarily be gradual if it is to show successful results and progress.

I question whether a daily medical examination of school children for infectious diseases would give results commensurate with the time and trouble involved, provided school teachers would report without any delay all suspicious cases.

Also it is doubtful whether a complete medical examination of the children would have the same practical results as special attention paid to those pointed out by the teachers, and a systematic inspection when the Medical Officer considered desirable.

Anthropometrical observations will probably be useful for statistical purposes and for future comparisons, but I am sure there is other work to be carried out first which will show more immediate practical benefits to the children.

For this work, whether extra medical assistance be given to the Medical Officer of Health or not, some reliance must be placed upon the co-operation and observations of school teachers, although teachers have already so much to do that it is unwise to add unduly to their duties.

At the same time, however, they can give much useful help by pointing out children who hold their books near their eyes, who appear deaf, who twitch, or sit in unnatural positions, who cough, or who become blue or breathless on exertion, etc., etc.

But all this involves some knowledge on the part of teachers which is often absent, and in order to overcome this difficulty it is necessary first to instruct these officials themselves.

With this object in view, I have already delivered a course of lectures to Blackburn school teachers on Infectious Diseases, and hope to continue the course, dealing with other conditions affecting school life. I think it would be highly beneficial to the scholars if every teacher had to pass an examination in school hygiene.

Eyesight.

The vision of each school child should be tested by the school teacher by Snellen's test cards. Lists can then be drawn up and the children with defective vision selected for suitable treatment.

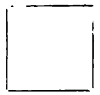
The following internal arrangements of schoolrooms have an important bearing upon the eyesight of the scholars, and may have good or evil effects :—

1. Lighting, whether natural or artificial.
2. The construction of seats and desks, and the position in which each scholar sits.
3. The type and paper of books, slates, maps, etc.
4. The kind of work, whether fine sewing, small writing, playtimes, etc.

Dr. James Kerr has said that "Needles, pins, pencils, and paper are all out of place in the infant school."

It is probable that an important cause of myopia is the eye-strain produced during school life through the small type of books. Cohn has carefully studied the type and mode of printing of school books which is desirable, in order that eye-strain and myopia may be prevented or diminished. The following are his conclusions: The height of the smallest *n* (this letter being taken for measurement) should not be less than 1·5 mm., the least distance between two lines of print 2·5 mm., the thickness of the stroke of a letter not less than 0·3 mm., the greatest length of the line 100 mm., and the greatest number of letters in one line 60.

Cohn recommends the following simple method of determining whether the printing of any book or paper is of this satisfactory nature : In the middle of a thin card (or visiting card) a square hole is cut, each side of which measures exactly one centimetre :—



The card with the centimetre square hole is placed on a page of the book or paper to be tested, the lower edge of the square being immediately above a line of print. If the type be satisfactory, only two lines of print can be seen within the centimetre square. If more than two lines can be seen through this square, the book should be condemned.

Hearing.

Every child with ear discharge should have medical advice.

Teachers may select all cases in which there appears to be impairment of hearing for examination by the Medical Officer. In testing the hearing the watch test does not appear to be reliable, as a child may not hear a watch which has a high-pitched tone, when he may have normal hearing for the lower tones of the voice. The audiometer, based on Hughes' induction balance, has been used extensively in America, but I understand that it is open to the objection that it tests in reality the scholar's mental appreciation of sound rather than his acuity of hearing.

According to Dr. Kerr, the most satisfactory test for the hearing of school children is the forced whisper, which in the playground will be heard by normal children at about 24 metres, and at 20 metres if the eyes are covered. The whole subject of the hearing of school children needs very careful investigation.

Children with verminous heads should be excluded from school until they are better, and parents should be compelled to realize their own responsibilities in these cases, and even should be subject to a penalty for default.

It is often difficult for suitable treatment to be obtained by the children of poor parents. In Blackburn there is an arrangement by which I can obtain recommendations for the Infirmary through members of the Education Committee. I think each Education Committee should subscribe to the nearest general hospital, so that there may be accessible a certain number of recommendations.

In the case of the children of the better classes an intimation may be sent to the parents.

It will be necessary for the Medical Officer to the Education Committee to be approved of by the Board of Education as a suitable officer to carry out the medical duties under the Act of 1899 for epileptic and mentally deficient children. These duties should first involve the preparation of a list of children, suitably classified, who can be taught in a "special school," at the head of which there should be a specially-trained teacher.

Arrangements can also be made to convey helpless children to and from their homes. And here I would say that I think parents are more willing to send such children to these schools if they are termed "special" and not "defective" schools.

A periodical examination of these scholars is necessary in order to draft to ordinary schools those children who have improved sufficiently, and in order to give advice concerning those children who cannot improve.

V. RECOMMENDATIONS FOR THE FUTURE.

It seems desirable that there should not be any undue delay in arranging the above-named duties upon a satisfactory basis.

In recent years the superficial accommodation required in schoolrooms has been increased in the last set of Building Rules issued by the Board of Education, by 1 square foot per head, *i.e.* to 9 square feet, and 10 square feet of floor space for the children in infants' and senior departments respectively. The Board have not yet re-assessed many of the old buildings. This is an improvement which should be effected soon, as the numbers 8 square feet and 80 cubic feet still appear in the Code of 1904. Certain American States prescribe 15 square feet and 200 cubic feet per head respectively. Also for the higher elementary schools of England the Building Rules require a minimum of 13 or 16 square feet of floor space per child, according as the rooms are fitted with dual or single desks.

I believe all schools should conform to this higher standard. Also the present standards for size of outlet and inlet ventilation openings, *viz.* 2 square inches and 2½ square inches per head respectively, should be increased, *i.e.* at least quadrupled, namely, to 8 square inches of outlet and 10 square inches of inlet.

Whatever may be said to the contrary, I feel sure it is highly desirable that in a future Code the Section 101*, which allowed absences due to infectious diseases to be counted as attendances, should be re-inserted.

This was a valuable practical aid in checking the spread of many epidemics in schools.

In this connection I would call attention to the high desirability of the prohibition of the attendance at school of children under the age of five years. I believe this would certainly lessen the spread of measles, which is such a frequent cause of school closure, and I do not think that the loss of education at school below this age would be serious. It is unfortunate, however, that the Board of Education will not sanction a trial of this measure.

There are many other points to which attention might be drawn, but the above seem to be the more important ones.

The field of school hygiene has now a new interest for many Medical Officers of Health, and abounds with subjects—some partly investigated, others not investigated at all—of the greatest practical interest, not only to the official concerned, but also to the general public.

MEASLES AND DIPHTHERIA.—T. Hellström has observed 112 cases of measles as a complication of diphtheria and 117 cases of diphtheria as a complication of measles during the last ten years at the Stockholm Hospital (*Hygieia* lxvii. No. 1, 1905). The respiratory organs did not seem to be more seriously affected than in cases of measles without diphtheria. The serum treatment has reduced the mortality considerably.

ON SANITARY WORK IN THE COUNTY BOROUGH OF WIGAN IN 1904.*

By WM. BERRY, F.R.C.S.I., D.P.H.,
Medical Officer of Health.

GENTLEMEN,

My first duty is to welcome you again to this our ninth annual re-union or our tenth meeting of conference. Our first meeting was early in January, 1896, and the conference decided to render me every assistance in the prevention of epidemic diseases, and I am glad to say that all the medical men of the town have up to this day carried out the promises then made; for this assistance I am deeply thankful.

The benefits derived from this annual meeting are manifold. It enables me to express to you my views as regards the prevention of disease; it enables you on the other hand to criticize the action of the sanitary authorities and its officers, for their actions during the past year.

Now I wish to ask you to take what I have to say in good part, and in the spirit in which it is meant, and I am willing on my part to bear any criticism which you may be disposed to give. I therefore ask you to express yourself freely, without fear or favour. My first remark is with regard to the death-rate. The death-rate for the past year is heavier than I could have wished. The increase in the zymotic rate, due chiefly to infantile diarrhœa, and deaths from the complications of measles, is accountable for this large death-rate. Death-rate; 21·49, for 1903, 21·89.

We have had a less number of cases of scarlet fever than in previous years, but with regard to enteric fever, we have had a few more cases, with a slightly increased death-rate.

The number of notifications from diphtheria has been considerably less, but we have a slight increase in the number of notifications of puerperal fever. Erysipelas also gives us about the same number of cases.

I do not think that the notification of erysipelas benefits the Sanitary Authority very much, excepting to enable us to pay half-a-crown for the certificate; it does enable us sometimes to find out sanitary defects.

Now with regard to the notifications of infectious cases, it is advisable that the practitioner attending should inform the patient's friends, before notifying that the case is one of infectious disease. When a notification certificate is received at our office, it is handed over to an inspector, who has specific instructions to inquire into the causes and the source of the infection; and if perchance the patient's friends are unaware the case is one of infection, they resent this inquiry, and much annoyance is caused thereby.

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* An address to the Medical Practitioners on January 16th, 1905.

It is my desire that all inquiries in reference to infectious diseases should be conducted with discretion and without unpleasantness, and that the certificates of all the notifying practitioners should be treated in the same manner. Further, I wish to state that it is a mistake for any general practitioner in the town, for the sake of pleasing his patients, to fail to notify any infectious disease. The case sooner or later comes to the knowledge of the inspector who has charge of this work, and it makes matters exceedingly unpleasant; it makes one also uncharitable in thinking that it may be done to score off his brother practitioners. This, Gentlemen, I know is not the case with you, but is a little failing on the part of those who do it to oblige their patients, whom they are anxious not to lose.

With regard to measles, the Committee at my suggestion decided for a further period of three years' voluntary notification of the first case, and this, although it is expensive by way of notification fees, is, I am convinced, of benefit to the town. There are those amongst you who can relate the benefits of early school closure.

Another point with regard to notification certificates: I would ask you to carefully fill them up. We pay for the certificate, therefore we have a right to ask it to be intelligently filled. We do not wish to have a certificate filled such as, John Brown's baby, or Mrs. Jones' baby, aged three months—name and occupier of house: the father—for this is not sufficient for our books, and leads to unnecessary inquiries being made when the inspector visits the house.

Now with regard to the isolation of infectious cases, I have always been anxious that sufficient isolation should be carried out at home; and by this I do not mean strictly efficient isolation, but such as will enable proper precautions being taken so that the disease will not spread. These cases I am anxious the medical practitioner shall attend at home. In other cases, where sufficient isolation and nursing cannot be carried out, I must have them removed to the Sanatorium for infectious diseases, provided for and maintained for the purpose at a great cost to the ratepayers. In these cases I am also desirous that the family medical attendant should continue his attendance under my direct supervision, and he ought to be paid for such attendance by the parent or guardian of such persons.

Now with regard to diphtheria, I would wish very much to emphasize the benefits derived from the serum treatment of this disease.

I would wish further also to call your attention to the benefits which are derived from the injection of antitoxic diphtheria serum as a prophylactic measure, and by a passing remark wish to state that an injection of this serum is beneficial in cases of septic sore throats. I need only mention that in all cases of diphtheria, we are willing to supply from the Sanitary Office the first dose of antitoxic serum.

And now, Gentlemen, in conclusion, I wish to thank you for your cordial co-operation and assistance during the past year. You are here to freely criticize my department, and in doing so I am sure I shall gain much knowledge and benefit which will enable me to discharge my duties as a Medical Officer of Health of a greater Wigan, and which I trust, will become greater still, and more important.

DISCUSSION.

Dr. T. M. **Angior** thought that paving of streets, back-yards, and passages was good in preventing, to some extent, infectious diseases. That school teachers should be careful about children attending school, and should notify to sanitary authorities.

Dr. **Benson** thought that return cases of scarlet fever were due to clothes, that get stored away and not disinfected, but used when the patient returned home. Erysipelas and puerperal fever were probably due to a streptococcus, and the worst cases of puerperal were those where the discharge was not fœtid.

Dr. **Blair** believed in strict isolation when cases were left at home, and in the case of diphtheria he believed in prophylactic doses of antidiphtheritic serum. In puerperal fever, he believed in curettage, and swabbing out with some caustic solution. He thought phthisis should be notifiable.

Dr. **Rees** thought that patent foods and sterilized milk did not do much good in infantile diarrhœa. Sanitary improvements in the homes of the people was what was required.

The following resolution was submitted to the meeting by Dr. Rees, and the same was passed unanimously: "That this meeting of Wigan medical practitioners desires to publicly set forth its strong opinion that a municipal abattoir is urgently required in the interests of the public health."

Drs. Fraser, Bradbury, Monks, Wolstenholme, France, Enright, Mitchell, Gibney, Tylecote, and Batten also took part. The Chairman of the Health Committee, Alderman Phillips, J.P., and Mr. Councillor Bannister, contributed their views on the sanitary improvements in progress and those accomplished in the past.

Oil of Cloves for Hand Sterilization.—J. C. Webster, of Chicago, describes (*Am. Journ. Obstetrics*, March, 1905) his method. After scrubbing for five minutes with soap and water, using a boiled stiff nail-brush, the skin is dried with a sterile towel, rubbed for one minute with alcohol, then unpurified clove oil is rubbed in for four or five minutes and afterwards washed off with alcohol. The hands are finally thoroughly rubbed with sterilized talc powder.

MILK DEPÔTS IN GERMANY.*

By Dr. VON OHLEN (Hamburg).

The first institution in Hamburg resembling the Gouttes de Lait was called into existence in 1889 by Herr Pastor Manchot. This was in the municipal offices, 69, Bachstrasse of the St. Gertrude's district. This is to my knowledge the oldest foundation of the kind in Germany, and probably in the civilized world. It has developed from the smallest beginnings, inasmuch as in the month of May, 1889, four children were supplied with 157 bottles of sterilized milk. The proof of the want of means of the receivers was waived by the founders.

The second was started in 1901 by Dr. Wentzel in Elisenheim Haiberg 30/32, for the distribution of sterilized milk to the children of the working and less well-to-do classes. Both institutions are open the whole year. Their arrangement is similar. The chief difference is that until lately in St. Gertrude a medical order was required to obtain the milk, as well as a prescription for its composition, while this was never done in Elisenheim. Since June, 1903, sterilized milk is distributed in St. Gertrude without medical advice.

Position of the Institutions.

The milk kitchen of St. Gertrude is in a thickly populated working neighbourhood. The distribution of milk is confined to the St. Gertrude District, which is one of the largest parishes of Hamburg, and includes the suburbs of Uhlenhorst, Barmbeck, and Hohenfelde. Recently, for the benefit of the further-off receivers, special milk depôts have been set up in three pharmacies, *viz.*, two in Barmbeck, and one in Hohenfelde.

The Elisenheim depôt lies at the outskirts of a district which was given as a free gift for building on, and is to serve for industrial purposes.

Quantity of milk distributed.—In general the quantity was greater in Elisenheim, in spite of its more unfavourable position, because the distribution was not under medical direction. This amounted from the October 1st, 1901, till September 30th, 1902, to 112,032 bottles; from October 1st, 1902, till September 30th, 1903, 172,768 bottles; the capacity of the bottles being 150, 200, and 250 grammes. The number of children supplied varied in the first year of business between 31 and 90, according to the time of the year.

In St. Gertrude the quantity of milk given out has increased from year to year. It amounted to, for example:—

1890	42,000	bottles
1895	54,402	,,
1898	63,454	,,
1899	54,582	,,
1902	64,708	,,
1903	95,374	,,

Each bottle contains 100 to 200 grms.

In the years which intervene there was always a slight retrogression from July to September, according to health conditions. In many years the sudden accession of acute gastro-enteric complaints in the hot summer months accounts for the greatly increased demand which frequently occurs.

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* *Zeitschrift für Hygiene und Infectionskrankheiten*, vol. 49, Part ii. (Extract from special article on the campaign against Infantile Mortality by public and private philanthropy in the provision of unexceptionable milk for children, with special reference to the conditions in Hamburg. R. K. Brown).

Source of the Milk.—Each of the institutions take their milk from a special dealer whose cow herd is only of moderate dimensions. The cowshed and herd of the milk producer for Elisenheim are carefully examined and approved by assistants of the Hamburg Hygienic Institute before the contract is signed. Special conditions of delivery are not included.

The milk as delivered, as well as the sterilized milk product, undergo a chemical and bacteriological examination at the Hygienic Institute every four weeks. The milk is brought by road to the milk depôt early every morning.

Chemical and bacteriological value of the Milk.—The sample taken every second month by the Hygienic Institute, two hours after its delivery, gave during the years 1903 and 1904 the following average result:—

	Acidity.	Sp. Gr. 15 c.	Fat (Gerber).	Non-fatty Solids.	Bacteria per cc.m. from Milk.
St. Gertrude ...	6·59	1·0322	3·05	8·92	1,203,300
Elisenheim	6·34	1·0309	3·20	8·62	1,405,125

Method of preparing and distributing the Milk.—The milk delivered in St. Gertrude at six in the morning is immediately put into bottles, sterilization is begun at 7.30 a.m., and the milk is ready at 9 a.m.

The preparation in Elisenheim begins at 8 a.m., because there are some difficulties in the delivery, so that the milk by the latest is ready at 12 mid-day. The process of sterilization is the same in both places. The milk is placed in a closed sterilizer, and slowly heated to 70°, and remains for half an hour in the apparatus after this temperature is reached, so that the maximum temperature reached is 85°–90° C. When the steam is let out the bottles, which are in a large wire basket, are placed in a special cooler with running water from the main for about thirty minutes. In St. Gertrude they are now placed on a large table and handed out at 11.30 to 12 mid-day, and 3 to 4 p.m. In Elisenheim there is only a single distribution from 2 till 4.30 p.m. In specially hot weather, on request, a portion of the day's allowance is kept till evening in an ice chest. In Elisenheim the customers carry their bottles home in a special tin basket with divisions. There are two of these for every family, the one not in use being kept at the depôt, where it is kept filled with the bottle for each household. Every basket bears a stamp which corresponds to a particular mixture in the Institute, so that confusion is impossible. These tin baskets are constructed in a practical manner so that they can be kept cool under the water tap. In St. Gertrude there are no special carrying baskets in use. Each bottle bears a label with a number which signifies the nature of the mixture.

The milk is also given out in single feeds, so that any manipulation in the home of the infant is superfluous. As remarked, in St. Gertrude the bottles contain 100 to 200 grms., in Elisenheim 200 to 250 grms. In the former different models of bottles, with rounded bottoms and spring stopper, are being tried; in the latter the original Soxhlet bottles with the ordinary rubber stoppers are in use. In St. Gertrude they are cleaned by a large foot-driven machine (Siegerin model), in Elisenheim by a smaller hand apparatus.

The mixture for healthy children is made after the table worked out in the Hygienic Institute of Hamburg, which gives the size of the meal according to age, the number of daily meals, and the amount of dilution of the milk with water. Milk sugar is used for sweetening. Milk is also mixed from medical prescriptions, mostly for sick children ; in Elisenheim with Quaker oats, rice gruel, and lime water (for rickets) ; in St. Gertrude with American oatmeal gruel, barley gruel, lime water, and lately with Theinhardt's infant food. This is done accurately according to medical prescriptions. Every mother receives with the first supply of milk printed directions how to use the nourishment, the cleaning of the bottle, teats, etc. In St. Gertrude on this occasion a deposit of 60 pfg. (about 7½d.) must be made for the bottles, for broken bottles are valued at 10 pfg. (about 1¼d.) ; in Elisenheim broken bottles must be replaced by the receivers.

Cost to Consumers.—In St. Gertrude a litre of sterilized milk is 25 pfg. (3d.), in Elisenheim 22 pfg. (about 2¾d.), a 200 grm. bottle costs 5 pfg. (0·6d.). In mixtures of milk the value of the milk is reckoned, and for the sugar 1 pfg. is added. A bottle of 200 grms. of a mixture of equal parts of milk and water costs therefore 3·5 pfg., *i.e.*, 2·5 pfg. for the milk and 1 pfg. for sugar (2 pfg.=just under 1 farthing). In the mixtures of milk and gruel, the latter in St. Gertrude, like the water, is not charged for. In Elisenheim the whole milk of the mixture is reckoned at 22 pfg. per litre, and then in addition a charge of 2 to 4 pfg. is made for the day's supply ; 6 pfg. more per bottle is charged for the Theinhardt food. The milk is paid for by the bearer in cash at the depôt, and generally on Sundays. There is no sale of tickets. The payments are mostly punctually and regularly made ; naturally there are some slow as well as bad debtors. For the genuine cases of poverty and those mixtures ordered by the parish doctors the Poor Law authorities pay.

Financial.—16 pfg. (2d.) per litre is paid for the fresh milk in St. Gertrude, and 15 pfg. in Elisenheim. The balance of the undertaking is such that the business pays itself in St. Gertrude, and the management in Elisenheim hope in this their third year to maintain the depôt with the addition of a moderate contribution. The early years, with their manifold experiments, have been very expensive. In St. Gertrude the budget balanced with an income and expenses of 2400 m. (£120), and among the latter were :—

Helpers (exclusive of sisters)	10 m. per month
Gas	10 to 12 m. ,,
Repairs, breakages of bottles	10 m. ,,

Elisenheim paid in 1902

Cleaning Materials	35·56 marks
Loan and Insurance	600·72 ,,
Postage and Freight	87·75 ,,
Smaller Articles	64·92 ,,
Artisans	102·90 ,,
Various	4·80 ,,
Ice	30·00 ,,
Gas	360·00 ,,
Total	1286·65 ,,

For milk and raw material (*e.g.*, sugar) 4,500 m. were paid. Consideration must be taken of the fact that both institutions have their rooms and the principal helpers, *viz.*, the district sisters, for nothing. The primary cost of the plant, etc., in St. Gertrude is estimated at 3,000 m. (£150) and at Elisenheim at 2,477 m. (£123 17s.).

Statistical.—There are no figures obtainable of the influence of these philanthropic institutions on the infantile mortality, since there has up to the present been no medical control of the children receiving this nourishment, except they happened to be patients of the Poor Law Medical Officers. The only supervision and instruction has been through the district sisters. Those Poor Law doctors who used the milk mixtures of these depôts in their practice, express themselves throughout favourably as to the results of the sterilized milk, and show great satisfaction in having unobjectionable infantile nutriment at their disposal. On several sides medical men confirm the prophylactic character of such institutions.

According to the report for Elisenheim for 1902, which year was favourable for gastro-enteric illnesses, the mothers expressed themselves very satisfied with the results of the sterilized milk. Public advertisement has hitherto been unnecessary for either place. According to the same report no child died of vomiting and diarrhœa during the year and a quarter of its existence.

HALLE.

On July 1st, 1902, a depôt for sterilized milk was opened on trial and closed on October 12th. The distribution was at first confined to a certain district, and inquiries were not made as to want of means of the receiver. As they did not find here sufficient customers, the delivery was extended to several districts occupied by working people. There were in all 149 people who received milk, and of these 87 were regular customers for a long time, 62 for a short period. Among these were 75 labourers, 42 artisans, 16 independent females, etc. 97 had an income of less than 900 m. (£45), 31 an income between 900 and 1,050 m. (£45 to £52 10s.).

The amount of milk given out was 5,799 litres, *i.e.*, 11,598 half litre bottles.

Source of Milk.—The sterilized milk came from the Halle Milk Supply. The chemical composition of the raw and prepared milk is not published.

Methods adopted.—The full milk was sterilized half an hour in steam at about 120° C. and was put in half-litre bottles closed with patent stopper. The consignors, the Halle Milk Supply Co., through their agents, then deliver it to the individual customers at their homes, morning and evening, between 6 and 7, on special hand-carts. The bottles have a label with a short explanation of how to use it, and the amount of dilution required. The dilution of the bottles was thus done at home by the mother.

The milk was given on receipt of tickets which could be obtained for 8 pfg. each from the apothecary, by giving the name, social position, dwelling, and age of the infant. This ticket entitled the bearer to one half-litre bottle of sterilized milk. The register was so managed that the chemists noted the name, etc., of the ticket-receiver "after they had convinced themselves that it was for a child under one year old and the family belonged to the district" (how they did this is not clear). In the evening these depositions were copied by a magistrate's clerk, and sent on a special sheet to the Municipal Offices, whence both the Halle Milk Supply Co. and the Association for the care of the Poor and Sick were informed of it.

On the morning of the following day the milk was first delivered to the ticket-holders. Through the members and sisters of this Association, the proper use of this sterilized milk was supervised in the different families, who were instructed in the care of the infants.

Trouble was taken to acquaint the inhabitants of the districts of the undertaking. To every mother who from the official lists was known to have a child under one year old, a printed announcement was sent, giving an accurate account of the aims and objects of the undertaking, and on the back instructions on the use of the sterilized milk, and especially on the feeding of infants. Furthermore, a similar leaflet was sent from the Registry Office to the address of every new birth in these districts, and finally attention was directed to it through advertisements and notices in the Halle newspapers.

Financial.—The sale price for a litre of sterilized milk was fixed at 16 pfg., 2 pfg. less than the ordinary market price of whole milk in Halle, in order to entice participants. 22 pfg. was paid to the Halle Milk Supply for 1 litre of sterilized full milk, which is their regular sale price. A deficit of 6 pfg. per litre had thus to be made up. This was done by the municipal authority. Since there were about 200 infants who used 1 litre each daily, which lasted in round numbers 100 days (*i.e.*, from end of June to end of September), the deficit on 20,000 litres at 6 pfg. per litre amounted to 1200 m. (£60). Since every child would not obtain the prepared milk, they contented themselves with a levy of 1000 m. Apparently this sum sufficed.

The milk bottles were supplied by the Halle Milk Supply, at 11 pfg. each.

Statistical.—The summer of 1902 was very cool, therefore the interest of the inhabitants in this work was moderate, and the number of cases of gastro-intestinal trouble small. Among 87 infants which were entirely, regularly, and for a long time nourished on sterilized milk, only 3 died —3·5 per cent. Of 147 chiefly nourished on this milk, 11 or 7·8 per cent died, but among these 11, 8 were already ill when they got this milk. Of 1632 children living in these same districts which did not receive this sterilized milk, 105 died, or 6·4 per cent. These small numbers naturally do not warrant conclusions. The opinions of those physicians of Halle who had opportunity of judging of its value, as well as the "Association for the care of the Poor and Invalid," are very favourable without exception.

LINDEN IN HANOVER.

Here milk is given out by the philanthropic society known as the Volkswohl ("Folksweal"). The sterilized milk is given out in closed bottles by the firm Nutricia in three kinds. It is sold at 15 and 16 pfg., and bought at 24–25 pfg., the difference being made up by the Society.

In 1902, 54,000 bottles were given to about 100 children between June 8th and August 29th, against 26,000 the previous year. The deficit was made up by the Society, and amounted to 1000 m. (£50). The magistrates in Linden expressed a very favourable opinion on the enterprise.

MAGDEBURG.

The magistrate here permits the Poor Law Medical Officers to order "bakehouse milk" (backhausmilch) for the infants in their practice.

POSEN.

One of the oldest attempts in Germany to provide children, especially the poorer ones, with sterilized nourishment with assistance from the authorities, is described by Pauly in Posen. It began in Summer, 1892.

Origin of the Milk.—The estate of Nachapanie, 15 kilometres from Posen, which has large fields of clover and meadow, supplied the milk. From a herd of 120 cattle 20 were set apart. Before milking, the cow's udder and the milkmaid's hands were thoroughly washed, and the tin vessels intended for milk thoroughly cleaned with soda. After milking, followed the cleansing by running it through a hair sieve and separating twice in a Laval separator. Nothing is known as to the chemical constituents of the milk.

Conduct of the Enterprise.—After the purification, the milk was filled in Soxhlet bottles with the patent stopper, and in the place of origin sterilized by heating 50 minutes to 104° C. After this process the bottles were placed in wooden boxes, and sent from the estate to Posen as required. Here they were deposited in three hospitals near the chief thoroughfares, *viz.*, the Diakonissenanstalt, St. Joseph's Kinder Krankenhaus, and the Latzschen Anstalt. It was given out as full milk in 100 and 200 grm. bottles. The feeds had to be prepared at home.

Quantity of Milk.—In 1892, during April, 262 litres, and in June 651 litres of sterilized milk were sent from the estate.

Financial.—The three hospitals sold sterilized whole milk to everyone for 15 pfg. per litre in 100 and 200 grm. bottles, or at the same rate at 3 and 6 pfg. per bottle. Funds collected by philanthropists permitted this low price. The Poor Law Medical Officers were further permitted during the summer months to order sterilized milk at public cost.

Statistical figures are absent. Whether and in what form the enterprise now exists is unknown.

STETTIN.

It may be here remarked that a sum of 300 m. was set aside for milk by the Poor Law Authority.

STRASSBURG.

Since 1899 milk freed from pathogenic germs by heating to from 60° to 65° C. (according to Dr. Forster) has been sold. They do not give out sterilized, but only heated milk, as it has a less unpleasant taste.

Source of the Milk.—The milk is delivered from the milk depôt of Dieboldt and Cronau, and the Elsace Milk Company along with their agencies and branches.

Nature of the Enterprise.—It is not known how these firms treat their milk. The Forster milk can't be kept, but must be used up soon.

Sale and Financial.—The milk is sold in bottles of ·9 litre capacity, at the rate of 20 pfg. When required it is sent to the customers. Among the less well-to-do and the poor the town helps in the following manner: For the first class the authorities give coupons for 15 pfg. per litre. They pay the deficit of 5 pfg. to the consignors. These coupons are given out for sale by the Burgomeister, all doctors, midwives, members of the Council for waifs and strays, and the nurses which look after them.

The deficit at the rate of 5 pfg. per bottle was made up to the milk companies by the city as follows :—

1899	for 2,150 bottles	...	107·50 marks.
1900	„ 2,710 „	...	135·50 „
1901	„ 48,056 „	...	2402·80 „
1st April to 1st Dec., 1902 ...	„ 114,714 „	...	5735·70 „

The Poor Law Authorities have the right to give out a certain number of coupons valued 20 pfg. for nothing. They gave :—

1900	1,221 coupons ...	244·20 marks.
1901	10,595 „ ...	2118·60 „
1902	14,129 „ ...	2325·80 „

For the year 1903 both the Town Council and the Poor-law Authority laid aside 5000 and 2000 marks respectively for this purpose, which has apparently been considerably exceeded. The outlay of the Poor Law is on an average 5000 m.

Statistical.—Accurate numerical statements are wanting. Nevertheless, according to the statement of the Burgomeister, the enterprise has been found to answer, and has already a favourable influence on the infantile mortality. In the half-yearly reports of the District Medical Officers, the good work of the milk distribution is emphasized.

STUTTGART.

Early in 1902 the Countess Luise Uxkull opened a milk depôt for distribution on a large scale, since up to this time only in very exceptional cases, for specially needy children, was milk given out. This milk depôt is attached to an invalid kitchen, in which on medical orders special diet, and when desired light and well-prepared food, is given to invalids, convalescents, and delicate persons. As regards organization, it is quite independent of the invalid kitchen, and hopes financially to be so. Its purpose is to check the very high infantile mortality, especially among the lower classes in Stuttgart, by giving those mothers who do not at all or only in part suckle their children, good milk to supplement the breast or to serve as a complete artificial food. Those without means constitute about 4 per cent of the applicants. They receive milk for nothing, either at the expense of private philanthropy or public institutions and sick funds, since both Poor Law doctors and many of those attached to benefit societies are permitted to prescribe sterilized milk.

Position of the Depôt.—It is situated in the centre of the town at the point of junction of three tram lines.

Number of Clients and Quantity of Milk given out.—From May, 1902, till the end of January, 1904, 170 infants have received their nourishment from the depôt. At the present time 26 children come daily for sterilized milk. During the hot summer months of 1902, the daily applicants rose to 45, but in the summer of 1903 there were only 24, since an incompetent Committee had forbidden its delivery to the house. In the winter months of 1902 the number fell to 12 or 15 daily. At present the quantity of milk distributed among the 26 children amounts to 210 bottles, containing 32 litres of sterilized milk.

Source of the Milk.—The milk comes from the royal domain of Klein-Hohenheim. It is the best whole milk, strained from dirt and delivered at a temperature of 8° C., which must be maintained during transport. It arrives in the depôt straight from the stall 2 or 3 hours after milking, the journey by van occupying 1½ hours. The stalls are under double supervision, *viz.*, that of the Central Department of Agriculture and also veterinary control. The cows are of the brown Swiss breed. They get only green food, and by far the greater part of the year are out at grass.

Method of Milk Preparation in the Depôt.—Immediately after the arrival of the milk, its specific gravity and percentage of cream are tested. It is then at once put into the sterilizer and heated for ten minutes to 95° C. The great advantage of this treatment is that the milk has no cooked taste, and after cooling is scarcely distinguishable from uncooked milk, even by fastidious palates. It is then cooled and placed in an ice-chest till given out. This chest is well ventilated, and has a temperature of 8° to 10°C. The milk is given out once a day in portions which are suitable for one day's ration. For new-comers, the first day's amount gets an extra preparation in a Soxhlet apparatus.

Where there are no special medical instructions, the milk is treated after the printed instructions of Fehling's book for midwives and nurses. On medical prescription, the milk is mixed with biscuit flour, children's food, gruel, sugar water, camilla tea, Eichelkaffee ("acorn coffee"), or cream. The last is sterilized at the same time. The remaining ingredients are allowed to boil up for 10 minutes before mixing. The mothers will presently receive printed instructions how to use the sterilized milk.

The milk is generally sent to the house of the purchaser. In the more distant suburbs, branch depôts exist in the apothecaries' shops, and their number will soon be extended. Besides the mere keeping of the list, accurate entries showing particulars concerning the infant are made. These comprise name, position, and dwelling of the parents, address of the doctor who sent them, date of his recommendation of the child, with name, age, and remarks on its health, prescription of the physician for nourishment, and the weight. Regular entries are made of every alteration of the nourishment, weight, and general health of the child, as well as of passing disturbances of health. From the information on the register, accurate nourishment tables and curves of weight are kept, which are regularly laid before the superintending physician, Dr. Kamerer. The population were informed of this institution by a single advertisement in the newspapers at first, and afterwards by doctors, nurses, midwives. The superintending physician has also given an account of the depôt at a "mothers' meeting" gathered from the labouring and industrial classes, and laid stress on the care of their infants as their first duty. This course will be repeated frequently in other districts.

Technical Apparatus of the Depôt.—The sterilizing apparatus consists of a simple gas stove with a water receptacle for 70 bottles, known as the Timpe-Magdeburg system. It has given complete satisfaction for two years. An order will be placed with the same firm early this year for a larger apparatus. Plain glass bottles with rubber stoppers and a capacity of 150, 250 and 500 grms. are used. Bottles and stoppers are cleaned by hand, a single soft brush and salt water being used. After being rinsed inside and out with fresh water, they are filled with water and placed ready for use. Machine washing is said not to have proved successful. Bottles and stoppers very frequently undergo a process of sterilization, and always when they have been used by sick children or returned in a dirty condition. The sterilized bottles are cooled in a double-bottomed receiver, filled with cold water; then follows a further cooling and storage in the ice chest till they are given out.

Financial.—The milk is at the present time bought at 20 pfg. per litre, and given to well-off people at 25 pfg. and poor at 20 pfg. per litre, as whole milk as well as a mixture. No special charge is made for delivery at the house or to the depôts. The receivers must pay daily, and as a rule do it willingly and without delay. As an example the following account of the expenses of the undertaking, from Sept. 1st till Nov. 31st, 1902 (91 days), will give some idea of the cost.

Rent	45·00	marks
Wages for Maid	45·00	,,
Coals and Gas	80·00	,,
1450 litres Milk at 17 pfg.	246·50	,,
Cream and Milk Sugar	43·50	,,
Barley, Oatmeal, Biscuit Flour	21·00	,,
Wear and tear	40·00	,,
Total	521·00	,,

According to the view of its originator, Countess Uxkull, the undertaking will pay its own expenses with the exception of the rent, as soon as they get a larger number of customers, so as to have 30 to 40 daily. At present about 1,000 m. yearly have to be provided out of public funds to cover the rent. The town has undertaken responsibility for the rent till April 1st, 1904.

Statistical.—Out of 170 infants who were under the care of the institution during the two years of its existence, 13, or 7·6 per cent, died, *i.e.*, 11 in the summer of 1902 and 2 during 1903. Of these 170, 120 could be called healthy and 50 were ill before they came for milk to the depôt. Of these 50, 20 were suffering from bowel complaints, 8 from vomiting and diarrhœa, and 22 from other causes. The 13 deaths occurred among these sick children. Of the 11 which died in 1902, 9 died of bowel complaints, 2 were weakly from birth. Of the 2 which died in 1903, 1 died of intestinal catarrh, and the other, according to the mother, of teething. Milder cases of diarrhœa and vomiting were decidedly benefited by their care at the depôt. These did not receive milk, but "acorn coffee" or some other preparation. Healthy children repeatedly contracted diarrhœa, even with sterilized milk, but very rarely both vomiting and diarrhœa. In the latter case it was always attributable to some omission on the part of the mother. The regular weighings gave excellent results. The infants showed an increase of 300 to 400 grms. in 10 to 12 days, looked healthy and drank eagerly. It is to be regretted that only a fraction of the children were brought regularly for inspection. Physicians, guardians of the poor, and public bodies are well satisfied with the results obtained by the depôt. The infantile mortality in Stuttgart during the year 1903 to every 100 births was in the town 18 and in the suburbs 27.

As we have seen, the philanthropic endeavours in Germany to cope with the infantile mortality show a great diversity of the principles on which their system is grounded. One can't say of them all that they satisfied justifiable demands, above all those which do not keep a strict supervision over the milk supplied to them. In some places especially the necessary attention is not paid to stall hygiene, obtaining and cooling of the milk. Common faults with them all are their neglect of the maternal nourishment, and, with the exception of Stuttgart, there is absence of medical supervision of the infants.

TENEMENT WATER SUPPLY.—The Paris Commission on Sanitary Regulations now requires that every house inhabited either by night or day be connected with the water main by a system of pipes, capable of carrying a proper service to each floor; a sink must be placed under each tap. No tap for drinking water must be placed in a water closet or privy.

SCHOOL HYGIENE.

Teaching of Hygiene to School Teachers in Worcestershire.—Dr. G. H. Fosbroke, the Medical Officer of Health for Worcestershire, has been instructed by the County Education Committee to arrange for a series of lectures on hygiene to be given in different parts of the county for the instruction of school teachers. A course of four lectures, each by a different lecturer, is to be given in five separate centres.

Pontypridd Education Committee.—The Pontypridd Education Committee has appointed the Medical Officer of Health, Dr. Howard Davies, Medical Officer to the Committee, and in his annual report for 1904 he states that he has inspected the eleven schools under the control of the Committee, with the result that many sanitary defects have been discovered. Five departments appear to be very seriously overcrowded. In one boys' school, with an average attendance of 235, there is accommodation for only 173, and in a mixed school with 300 in average attendance, there is only room for 260. Dr. Davies states that the committee is taking steps to provide the additional accommodation necessary.

Partial Closure of Schools.—The elimination of Article 101* from the Elementary School Code has added very considerably to the difficulties of Medical Officers of Health in dealing with outbreaks of infectious disease where public elementary schools are concerned. The Education Committee of the county of Gloucester has recently made an attempt at lessening those difficulties by requesting the Board of Education to so amend Article 46 of the Code of 1904 as to provide that where an infant class and the lower standard are excluded from school attendance on account of infectious disease the "average attendance" of the children so excluded may be calculated separately from that of the older children. The committee state that their proposal could easily be carried out by only considering number of times the school had been open on account of the older children, and not, as at present, the total number of times open, whether for infants or for older children.

Fainting among School Girls in Derbyshire.—During the latter part of May there was what has been described as an epidemic of fainting among the girls attending the public elementary school at Clowne, a small colliery town in Derbyshire with a population of 4000 persons. It appears that for many months the atmosphere of one of the classrooms in the school has been objectionable, and occasionally girls fainted while in the room. About the middle of May there were 46 cases of fainting in four days. The attacks lasted from ten minutes to half-an-hour, and in some cases were attended with shivers and spasms. Dr. S. Barwise, the county Medical Officer of Health, after visiting the schools, concluded that the attacks were either due to poisoning by carbon monoxide, or were of nervous origin. Tests for carbon monoxide and dioxide gave negative results for the former, and showed no excess of the latter. There had been some escape of coal-gas at an early stage, but that had been remedied, and no defects were found in the school gas-pipes. There is no water gas added to the gas supplied. The open fire-places had been stopped up. The ground under the floor is not concreted, and it has been suggested that the illness may be due to "after damp" finding its way through. A "fault" runs through the ground below the school, and possibly the underground air may have been disturbed by the recent earthquake, and some of it may have found an exit into the school. A class of boys who subsequently used the same room was unaffected, but this may be due to the cessation of the flow of gas and the improvement in ventilation.

PAYMENT FOR CERTIFICATES OF UNFITNESS OF CHILDREN TO ATTEND SCHOOL.—The British Medical Association has published the replies received to a circular addressed to all the county councils and councils of county boroughs in England and Wales, inquiring what provision, if any, had been made for the payment of medical men who give certificates required by the education authorities of unfitness of children to attend school on the ground of ill-health. Of the 62 county councils 39 replied, and 59 of the 67 county borough councils replied. In 70 instances no provision for payment has been made. A salaried Medical Officer gives the certificates in 6 instances, and 11 county councils and 11 county borough councils pay fees usually varying from 1s. to 2s. 6d. for the certificates required. In several cases a distinction is made between cases seen at a surgery and those visited at the child's home. The Oxford Corporation pays a fee of 5s. where a visit is required, and the Leeds Corporation pays 10s. 6d. when a visit from their special Medical Officer is required to certify in a case of poverty or a case in which a medical certificate obtained by the parents does not satisfy the Education Committee.

THE MEDICAL INSPECTION OF SCHOOLS IN THE WEST RIDING.—At a conference of representatives of West Riding district councils held at Leeds on May 17th, the following resolution was adopted on the proposition of the Clerk to the Goole Urban District Council:—

"In the opinion of this conference it is expedient and desirable in the interests of public health that local medical inspectors should be appointed to make periodical visits of inspection to elementary schools within the districts throughout the urban and rural areas respectively in the West Riding, so as to enable such officers to obtain early information concerning the presence of infectious diseases amongst school children which are not provided for under section 6 of the Infectious Disease (Notification) Act, 1889, and that this duty devolve upon the Medical Officers of Health appointed for the respective districts."

It appears that in November of last year, the Goole Urban District Council sent a resolution in somewhat similar terms to the West Riding County Council, but the County Education Committee would not agree to the proposal, and expressed the opinion that a trained teacher on the spot, in conjunction with the local and central public health machinery, could usually render all the service that was possible.

SCHOOLS AND INFECTIOUS DISEASES.—ACTION OF THE GLOUCESTERSHIRE EDUCATION COMMITTEE.—The Medical Officer to the Gloucestershire Education Committee (Dr. J. Middleton Martin) has issued a circular to school teachers in which he points out what action should be taken by them to prevent the spread of infectious disease in schools. He advises that whenever a teacher has any reason to suspect that a child is suffering from any infectious condition, it should be at once sent home with a written note to the parent explaining the reason and requesting that the child should be seen by a doctor and that a report as to his opinion should be sent to the teacher by the parent. For this medical report the Education Committee offers to pay a fee of one shilling. When several cases of an infectious disease occur, Dr. Martin suggests that the teacher should at once communicate with the District Medical Officer of Health, giving him the number of older children and of infants on the books, the normal average attendance, the numbers present at immediately preceding meetings, the number of known cases of the disease in question, with the names and addresses of those affected, the number absent because of illness in their homes, the number of suspected cases, and whether the illness is limited to children from any one locality. Accompanying the circular is a schedule of the chief symptoms of the more common infectious conditions, together with information as to the exclusion of affected children and children in infected houses. The infectious diseases included in this schedule are scarlet fever, diphtheria, small-pox, chicken-pox, measles, German measles, mumps, and whooping cough. Other contagious conditions mentioned are scabies or itch, ringworm, ophthalmia (contagious eye disease), impetigo contagiosa, and pediculosis (lice in head or body).

INFANT DEPARTMENTS.—The Education Committee of Sunderland have agreed, on the recommendation of Dr. Renney, the Medical Officer of Health, backed up by the Public Health Committee, to ask the Education Department for power to prohibit children attending school under the age of five years. This Committee has also agreed to exclude any child from school for at least a month after having had diphtheria; a similar regulation to apply to children living in the same house with the infected person.

INSANITARY SCHOOLS IN THE HIGHLANDS.—In the debate in Parliament on the Scottish Estimates, complaint was made that there was only one Medical Inspector of the Local Government Board, whereas Ireland, with a smaller population, had seven inspectors. Many schools in the Highlands lacked proper ventilation, and sanitary arrangements, while a large number were absolutely without water supply. The Lord Advocate, in reply, said that Scotland had County Medical Officers and Ireland had not, and therefore, so far as the Local Government Board were aware, one Medical Inspector was able sufficiently to discharge the duties that fell upon him, and there was no justification for appointing additional medical inspectors. An investigation was being made in regard to the water supply of the particular schools in which the hon. member was interested, with a view to seeing whether any change was necessary, and whether, if a change was necessary, it could be carried out at a reasonable cost.

CHILDREN UNDER FIVE.—Dr. Symons, of Bath, in his annual report for 1904, says he thinks it unfortunate that any grant is paid for children under five years of age. The restraint of school life, and the work put upon the eyes and nervous system at so early an age, cause permanent injury. Children who do not go to school until they are five or six years of age rapidly overtake and pass those of similar capabilities who begin school as babies of three years.

ANTITYPHOID INOCULATION.—The German Commission appointed to consider the use of antityphoid inoculation in the army, have presented an important report. They agree with the conclusion come to by British committees of enquiry, that it is impossible to doubt that inoculation can confer a certain measure of protection, but that it is urgently desirable to seek for further information based so far as possible upon absolutely trustworthy data, with regard to the degree and duration of the protection conferred.

THE PREVENTION OF INFANTILE MORTALITY.

A CONFERENCE on the prevention of infantile mortality and the welfare of nursing mothers and suckling infants was held on June 5th at the St. Pancras Town Hall. Dr. R. M. Beaton, Chairman of the Public Health Committee of that borough, presided. Sir Lauder Brunton wrote advocating that pure fresh milk should be used rather than boiled or sterilized milk for infants' food.

The resolutions set out below were adopted :—

A.—Mothers.

1. That it is desirable that every encouragement should be given to prospective mothers to seek advice as to the management of their health, so that they may endow their offspring with good constitutions and prepare themselves to suckle their infants when born.
2. That it is desirable that all efforts should be exhausted upon improving the health of suckling mothers before devoting attention solely to their infants.

B.—Breast-Feeding of Infants.

1. That it is desirable that births should be registered within five days of their occurrence, as is required in the case of deaths by the Births and Deaths Registration Acts, and be not delayed for six weeks and longer as now by law permitted.
2. That it is desirable that the municipal authority should obtain weekly returns of births from the registrars.
3. That it is desirable that the municipal authority should send to the addresses of all mothers, furnished in the weekly returns, cards or leaflets of advice, laying greatest stress on the improvement of ante-natal conditions, on the preparation for and maintenance of breast-feeding of infants during the first nine months of life, and strongly advising mothers not to wean their infants prematurely except upon medical advice.
4. That it is desirable that women inspectors should be appointed with a view to the prevention of infantile mortality by selecting from the weekly returns suitable cases amongst the poor for inquiry, affording general information in the hygiene of nursing, and directing the necessitous poor where to apply for such advice and assistance as may be urgently required in order to maintain breast-feeding.
5. That it is desirable that medical practitioners, midwives, and nurses, the staffs of hospitals and dispensaries, and the religious, charitable, and social organizations should co-operate with the municipal authority in endeavouring to encourage breast-feeding, and to diminish the infantile mortality.
6. That it is desirable that any suggestions or arrangements made by medical practitioners or by the medical charities for the purpose of advising nursing mothers with a view to preventing infantile mortality, should be communicated to the municipal authority in order that they may be made known through the women inspectors.
7. That it is desirable that the information should be spread broadcast that breast-feeding is the most economical, easy, and safe mode of feeding infants under nine months of age, with a view to reducing the number of hand-fed sucklings to the smallest proportion possible.

C.—Premature Weaning.

1.—That it is undesirable that a suckling mother should be separated from her infant, or the infant from the mother, except for reasons of ill-health and under medical advice.

2. That it is desirable that when a woman inspector has reason to believe that a suckling mother is in a necessitous condition and unprovided with sufficient food to enable her to maintain her own strength and suckle her infant as well, she should endeavour to prevent weaning by reporting the case to the charitable organization most appropriate to deal with the circumstances.

3. That it is desirable that when a woman inspector finds that a suckling mother has insufficient nourishment, due to the husband being out of work, she should report the case to the labour bureau.

4. That it is desirable that mothers should be urged not to wean their infants until the ninth month of age except upon medical advice.

5. That it is desirable that mothers should be warned that the hand feeding of infants is expensive, troublesome, and unsatisfactory, risky at all times, and in summer dangerous and often fatal.

6. That with a view not to encourage premature weaning, it is desirable that milk for the hand feeding of infants provided privately or publicly by milk depôts at or below cost should be distributed upon the orders of medical practitioners.

The following resolution being opposed by some of those present was withdrawn: That it is desirable that a suckling mother, if obliged to work at a trade, should work at home as an outworker, rather than in a workplace away from home which may necessitate weaning, and that to facilitate the fetching and returning of work materials by outworkers, rapid and cheap means of transit radiating from business centres are necessary.

D.—Hand Feeding of Infants.

1. That, having reduced the number of sucklings required to be handfed to the smallest proportion possible, means should be devised for providing suitable milk for the remainder.

2. That it is undesirable to encourage the use of unclean, stale, or decomposing milk by pasteurizing or sterilizing it for the use of hand-fed infants who unfortunately cannot be fed with clean, fresh milk directly from the breast.

3. That it is desirable that cows' milk intended for hand-fed infants should be milked, transported, and distributed under special precautions.

4. That the special precautions required in the production of cows' milk for infants should include not only care in the selection, testing, and feeding of the cows, but also care in their pasturing, sheltering, and tending; not only extreme cleanliness in milking, but also rigid aseptic precautions, accompanied by immediate refrigeration, maintained during transport, and by prompt dispatch, so that the number of micro-organisms and the lactic acid in the milk may be reduced to a minimum at the time of delivery instead of the hundreds of thousands and millions of organisms and excess of lactic acid now to be found in so-called fresh milk.

5. That in order to prevent the pollution of infants' milk in distribution and in the home, it is desirable that it should be protected in stoppered bottles ready for feeding, and not be transferred to other bottles.

6. That on account of the facilities that hand-feeding affords for the over-feeding and under-feeding of infants, due to want of knowledge, especially amongst the poor, it is desirable that the quantity and quality of milk required for each feed at the particular age should be distributed

in a separate stoppered bottle, and that each basket or crate of bottles for use should be accompanied by instructions as to the frequency and manner of feeding.

7. That the provision of cows' milk produced under aseptic conditions, accompanied by extreme cleanliness, refrigeration and dispatch, so diluted and enriched and put up in stoppered bottles in such quantities, to be administered at specified intervals suitable for suckling infants, should be regarded not only as ordinary food, but in the nature of medical assistance.

8. That for the special protection of hand-fed infants it is desirable that Municipal Authorities should not only ascertain the quality of milk intended for infants by chemical analysis, and receive from the public analyst a statement of the percentage composition of each sample of milk submitted, as to fat, solids not fat, and total solids, and the absence of chemical preservatives, but also by bacteriological examination, and receive from the bacteriologist a statement in regard to each sample of milk submitted as to the number of micro-organisms per cubic centimetre and the proportion of lactic acid per cent., these being the best existing tests of cleanliness and freshness of the milk.

VAGRANCY AND THE SPREAD OF INFECTIOUS DISEASE.

The Conference held in November last at Spring Gardens appointed a Committee consisting of representatives of County Councils, County Borough Councils, and Metropolitan Authorities to give practical effect to the resolutions adopted by the Conference.

The Committee forwarded the resolutions adopted by the Conference to the various Associations of Local Authorities, and resolutions endorsing the majority of the decisions of the Conference have been received from the Associations of Municipal Corporations and of Metropolitan Borough Councils, and the Association of Poor Law Unions of England and Wales. The County Councils' Association has referred the resolutions to the various County Councils, but no decision has as yet been arrived at by the Association.

On Thursday, June 22nd, a Deputation consisting of the Committee of the Conference and representatives from the Association of Poor Law Unions was received by the President of the Local Government Board at the House of Commons. The Deputation was introduced by Sir Walter Plummer, M.P. Alderman Dr. Newton, of Newcastle-upon-Tyne, submitted the resolutions adopted by the Conference and those adopted by the Associations already mentioned. He urged that legislation to give effect to the views of the Conference should be promoted at an early date. The Mayor of Wandsworth (the Rev. J. H. Anderson) spoke on behalf of the Metropolitan Authorities, and Dr. G. Millson Rhodes on behalf of the County Councils. At the conclusion of the latter's remarks, Mr. Balfour, who gave the Deputation a most sympathetic reception, invited all those present to express their views on the question.

LAW REPORTS.

HIGH COURT OF JUSTICE.

KING'S BENCH DIVISION.

April 3rd, 1905.

BEFORE LORD ALVERSTONE, L.C.J., KENNEDY AND RIDLEY, J.J.

FIRTH *v.* MCPHAIL.

Public Health Act, 1875, ss. 116, 117—Public Health Acts Amendment Act, 1890, s. 28—Unsound Meat—Deposit for Sale on Premises not belonging to defendant—No exposure for sale.

A person who deposits unsound meat for sale on the premises of another is not punishable under Section 117 *of the Public Health Act*, 1875, *unless there has been an exposure for Sale, and the law in this respect is not altered by the Public Health Acts Amendment Act*, 1890, *s*. 28.

This was a case stated by the stipendiary magistrate for the city of Kingston-upon-Hull on the hearing of an information alleging that the defendant Firth was the owner of a carcase of a cow which had been deposited in the slaughter-house of one Charles Brader for the purpose of sale and intended for the food of man, which carcase was diseased and had been seized and condemned.

The cow had been killed and dressed when on the point of death, and the defendant, knowing the circumstances, had purchased the carcase and had deposited it for sale on the premises of a meat salesman in Kingston-upon-Hull, where it was seized and condemned. It was contended that under Section 117 of the Public Health Act, 1875, the defendant was not punishable, as the person so punishable must either be the person to whom the carcase belonged at the time of exposure for sale, or the person on whose premises it was found. As to the first it was never exposed for sale, and as to the second alternative it was not found on the defendant's premises, and the Public Health Acts (Amendment) Act, 1890, s. 28, did not alter the law. The case of *Barlow* v. *Terrett* (1891) 2 Q.B. 107 was relied upon. The magistrate convicted.

Clarke Hall appeared for the appellant; *Danckwerts, K.C.*, and *Sington* for the respondent, who was the principal meat inspector for Hull.

The court allowed the appeal.

LORD ALVERSTONE, L.C.J., in giving judgment, said that looking at the scope of the amending Act and the previous legislation he could not hold that the amending Act altered the previous law so as to make the defendant punishable. Section 117 of the Public Health Act, 1875, is a section which imposes a penalty on certain persons, and we have to say whether the section, taken by itself, or as amended by the Act of 1890, is wide enough to enable a penalty to be inflicted upon a man who has deposited for sale, but whose article has not itself been exposed for sale. Now, taking Section 117 by itself, I think that whatever may be said as to *Barlow* v. *Terrett, supra*, there is nothing to enable us to answer the reasoning which DAY, J., then undoubtedly adopted. He regretted that he was obliged in that case to let the man off. That would point to his strong view that the statute could not be construed in the way which would make the man liable to the penalty. Now, Section 116 provides for the seizure of meat exposed for sale, deposited in any place for the purpose of sale, or for preparation for sale and intended for the food of man. Section 117, directing that "the justices might condemn the articles seized," went on to order it "to be destroyed so as to prevent it being exposed for sale or used for the food of man," and went on to say, "and the person to whom the same belongs or did belong at the time of exposure for sale or in whose possession or on whose premises the same was found, shall be liable to a penalty." The last set of words, "in whose possession or on whose premises the same was found," have not to be considered in this case. As to the earlier words, it may be that in the matter of penalty the legislature thought the forfeiture of the meat was a sufficient punishment unless there had been an actual exposure for sale. As to the amending Act of 1890 he did not think it altered the law. In London, under the Public Health (London) Act, 1891, the case now in question would have been an offence.

KENNEDY and RIDLEY, J.J., concurred, stating that the point was not an easy one, and that the statutes were in such a condition as to make it very difficult to form a definite opinion.

May 15*th*, 1905.

BEFORE WILLS, J.

J. RICHARDS (LTD.) *v.* WESTON.

Sale of a Dairy Business—Breach of Warranty—Mixing Skim Milk with Pure Milk.

This was an action brought by the purchasers of a dairy business against the vendor of that business, for damages for breach of warranty. The alleged warranty was that the business was a business of selling genuine milk which brought in a profit of £1,800 per annum. It was said, however, that this profit could not be obtained by selling new milk, but that the profit had been made by separating and selling the cream from 26 gallons of milk and adding the resulting skim milk to the pure milk sold to the customers. In the contract of sale the defendant had represented to the plaintiffs that the daily sale of milk was 320 gallons at 4d. a quart. The defence was a denial of the plaintiffs' allegation, and a statement that the practice was at the time of the sale known to the plaintiffs. The £1,800 per annum profits on which the sale price had been calculated, included the profits made by the daily sale of 6½ quarts of cream abstracted from the 26 gallons of milk. Subsequently to the sale the practice was discovered by the plaintiffs and immediately discontinued. The defendant, when her attention was called to it, said she did not believe in the public having too much of the profit. The plaintiffs asked the defendant for compensation, and calculated their loss at about £350 a year, and they claimed four years' purchase on the said sum.

Robson, K.C., and *Ellis Griffith* represented the plaintiffs; *Powell, K.C.*, and *McCardie* the defendant.

Mr. Frank Denny, a director of the plaintiff company, said that the plaintiff company bought the business for £8,900, of which £7,000 represented roughly the value of the good will of the defendant's business. Four years' purchase was a good price for the goodwill of a first-class milk business. Fourpence per quart was the highest price at which pure milk was sold in London. After separation of the cream there was great difficulty in finding a buyer of the skim milk at 2d. a quart. Generally the skim was run into the drains. Milk varied in richness according to the kind of cow and its age, and perhaps its food.

Mr. Burgess, an accountant, said he had inspected the defendants' books, but had not noticed anything to lead him to suspect the existence of this practice. His inspection was a rather hurried one. From what he saw he imagined that the skim milk resulting from the abstraction of the cream from 26 gallons of whole milk was thrown away, and not added to the rest of the whole milk. The proportion of cream to milk of 1 to 16 held good through the north, south, and Midlands of England. The average daily yield for 53 weeks of milk at 4d. a quart was only 315½ gallons.

James Hearn said he had been in the defendant's business for 17 years as canvasser. A separator was used, and at first the skim was run away, but afterwards the skim was added to the new milk. About two churns, or 32 gallons, were separated daily. At times he did the work. After a complaint from customers of the quality, he would report to the defendant, and perhaps after that the customer in question would for a time be supplied with special milk from the farm. Inspectors had taken samples of the milk, but he had never been summoned. He was still canvasser to the plaintiffs.

Andrew McEwan, who had acted as foreman of the defendant's business, said the practice of adding the skim was done about twice a day. He had told Mrs. Weston the practice could not be continued if the milk was to be as good as that supplied by other firms. It was not stopped by her.

Mr. James Richards, chairman of the plaintiff Company, said a certain sum was offered for the business on the basis of its producing a certain profit. He told Mrs. Weston he would not allow the practice, and that in consequence of discontinuing it they would lose £400 a year.

Powell, K.C., submitted there was no case. There was no reason why one customer should get very rich Alderney milk and another poorer milk, while both paid 4d. a quart. The only warranty given by the defendant was an express warranty as to the quantity of milk at 4d. a quart sold per day. It was clear that that amount at that price was daily sold, and was absolutely genuine, without alteration of any kind. The term "milk" used in the guarantee was a generic term, and included skim milk. There were as many varieties of milk as of eggs. No guarantee of quality was asked for or given, and the guarantee of quantity was only for a week and not for a year. When there was an express warranty, he submitted, no implied warranty should be read into a document. *Hamlin* v. *Wood* (1891, 2 Q.B., 491). He referred to Sections 3, 6, and 9 of the Food and Drugs Act, 1875. Section 9 did not apply, because the skim milk was never sold as such. What had been sold contained the full normal quantity of milk solids and fats. Section 4 of the Act of 1899 gave powers to the Board of Agriculture. It did not define milk. There had been no contravention of any Act.

Robson, K.C., submitted that section 11 of the Act of 1899 was conclusive as to this practice being an offence, and it overruled the prior case of *Lane* v. *Collins*. Since 1899 milk did not mean skim milk. "Milk" now meant normal milk. The offence could not be avoided by mixing the skimmed milk with normal milk. A standard of quality was included in the contract—namely, milk at 4d. a quart. That was the ordinary price of good milk as it came from the cow.

WILLS, J., in giving judgment for the defendant, said that the plaintiffs had relied solely on a warranty, not on fraud. The warranty was in Clause 4 and guaranteed 320 gallons a day fetching 4d. a quart. That prevented skim or bad milk from being included. There was no guarantee, express or by implication, that the milk was as it came from the cow, but in any case, he thought such a guarantee had been performed. The warranty of quantity applied only to a reasonable series of weeks, not to a year. Quite apart from the propriety or otherwise of the practice, the guarantee of quantity had been performed. In his opinion, the defendant's books clearly showed this practice, and dispensed with need of further notice. The accountant should have discovered it from the books if he had made a careful search, and if he had not been so hurried. He did not think that Section 9 of the Act of 1875 hit this practice of selling skimmed milk mixed with normal milk, and no one had been prosecuted for such an act, nor did he think that Section 11 of the Act of 1899 made it an offence. Without feeling much doubt, he gave judgment for the defendant.

LIVERPOOL ASSIZES.

May 12th, 13th, 15th and 30th, 1905.

BEFORE WALTON, J., AND A SPECIAL JURY.

EVANS *v.* MAYOR, ETC., OF THE CITY OF LIVERPOOL.

Damages for Injuries caused by Infection—Negligence—Child discharged from Fever Hospital while infectious—Liability of Corporation.

A municipal corporation who provide a hospital for infectious diseases under Section 131 *of the Public Health Act*, 1875, *are not liable for damages in respect of injuries caused by infection due to a patient being discharged from the hospital before he is free from infection, although such premature discharge was due to a want of reasonable care and skill on the part of the visiting physician appointed by the corporation.*

This was an action in which the plaintiff claimed damages from the Liverpool Corporation for negligence in discharging his son from an infectious diseases hospital before he was free from infection.

Tobin, K.C., and *Layton* appeared for the plaintiff; *W. F. Taylor, K.C.*, and *Cuthbert-Smith* for the defendants.

The plaintiff's son was received into the City Hospital on November 1st, suffering from scarlet fever. He was removed to Priory Road Convalescent Home on November 22nd. He was discharged on December 23rd, and shortly after his discharge three other children of the plaintiff were taken ill with the same disease, one of whom died. It was alleged that they caught the infection from the child, who had been prematurely discharged. Reliance was placed on the fact that the child's feet had not finished peeling and that he was suffering from two small sores, one on the ear and the other at the corner of the mouth. The existence of the first sore was denied, but the other was admitted. For the defendants it was maintained that they were not responsible for the acts of the doctor who discharged the child, and that, if they were, there was no evidence of negligence. Among the rules of the hospital was the following: "The visiting physician shall be responsible for the treatment of the patients from the beginning to the end of their stay, and also for their freedom from infection when discharged." The terms of the visiting physician's appointment were contained in a resolution of the Hospital Committee of the Liverpool Corporation, dated March, 1896: "That Dr. Robert Archer be engaged as visiting physician to the City Hospital, Priory Road, Anfield; that he be paid at the rate of £50 per annum; that the engagement be determinable by one month's notice, which may be given at any time, and which, on behalf of the corporation, may be signed by the town clerk and posted to his (Dr. Archer's) last known place of abode; and that the engagement be also subject to the following conditions: viz., That Dr. Archer be responsible for the medical treatment of the patients, and that he visit the Priory Road Hospital every day if requisite, that he sign a book when entering and leaving the hospital; that he make such reports and give such attendances at the meetings of the Port Sanitary and Hospitals Committee as may be required by the committee; and that he act under the general directions of the committee."

The plaintiff and his wife and several other witnesses were called to prove the existence of the sores on the mouth and ear of the patient after his discharge from the hospital.

Dr. Richard Walter Marsden, consulting physician, of Manchester, stated he was formerly superintendent of the Monsall Fever Hospital at Manchester, where he had from 12,000 to 15,000 cases of scarlet fever under his care. He differed from the statement made by Dr. Archer that no importance was attached to the sore at the corner of the mouth. He (the witness) should say it would be dangerous to allow a child to leave the hospital after six or eight weeks' illness from scarlet fever with a sore, even though the sore had not been caused by the disease. It might afford a seat for the microbes to lodge in, and a sore on the mouth would be specially dangerous from the risk of kissing and using the same eating utensils.

In cross-examination, witness said if the sores were not caused by the disease itself, they might be infectious. He would not think of allowing a case of a sore arising from the disease to leave under three months. It had been found that as a rule in these cases there is little infection after twelve weeks, but certainly there are dangers in allowing a case out after five or six or seven or eight weeks. Under the most favourable circumstances he would not discharge a patient with a sore. In his opinion the doctor was wrong in his judgment in discharging the child when he did.

Dr. Glynn, consulting physician to the Royal Infirmary, and Professor of Medicine at the Liverpool University, agreed with Dr. Marsden's evidence. The general rule, he said, was laid down in text-books that children should not be discharged with sores. That was a rule acted upon in practice, and he believed, recognized in the profession. It had always been his notion of the position. If a child came out of hospital with a sore of any kind he should look upon it with great suspicion. It had been shown that such children conveyed disease more often than children without sores. There was a great difference of opinion on these matters, but he should not like to have done it himself. He should have preferred waiting until the sores were healed.

Dr. J. P. Nickson, the plaintiff's family doctor, deposed to being called in to see the boy Stanley on the 28th. He then saw Reginald, and on examining him on the following day he found that his feet were peeling, and that there were sores at the angle of the mouth and on the ear. He did not attach much importance to the question of the peeling. There was not so much importance attached to peeling as there used to be. The child's mouth was not healed until the 27th February.

For the defence it was urged that as Dr. Archer had honestly exercised his competent judgment in the case, he could not be found guilty of negligence. In this case, Dr. Archer, the matron, and the nurses took pains to inform their minds in regard to the condition of the boy. On the 22nd December the boy was put to bed with the special purpose of being examined with regard to the question of discharge. Dr. Archer observed the sore on the mouth, but was prepared to say that there was not then a sore on the ear. He expressed the opinion that the sore had nothing to do with the fever, and came to the conclusion that the boy was convalescent and fit to be discharged.

Dr. R. I. Richardson, visiting physician to the Netherfield Road Fever Hospital, said that the boy while in that institution was under his observation. It was an ordinary, typical, uncomplicated case of scarlet fever.

Cross-examined, witness said that about six weeks was the minimum period for quarantine. Before discharging a boy to go to a home where there were more young children a very close examination should be made to see that the child was free from any symptoms of infection. Sometimes there was peeling, especially of the heels, which was not due to scarlet fever. After seven weeks and two days he would discharge a boy with a large sore down the ear. He would not attach much importance to a sore outside the mouth—not so much importance as to one inside the mouth. The sores referred to would not be a reason for not discharging the boy. The sores might become infectious if not looked after. Witness would warn the parents, if the sore was a large one, to place the child in the hands of the doctor, and to have disinfectants used.

Elizabeth Sheldon, matron at Priory Road Hospital, stated that the case, while under her charge, was a straightforward convalescent case of scarlet fever. When the boy was examined before being discharged he was quite free from peeling, and his condition was generally good. There was only a small dry sore at the corner of the mouth, which would easily have been covered by a threepenny-piece. There was no sore on the ear. A notice was posted in the office to the effect that children discharged from Priory Road should not be allowed to sleep with other children for fourteen days.

Dr. Robert Samuels Archer, visiting physician to Priory Road Hospital, said he had had a large experience of fever cases. He described the case of the boy Evans as straightforward and uncomplicated, and the progress was uninterrupted until recovery. On the 22nd December he examined the boy on the report of the matron. He found the skin on all parts of the body perfectly clean, and there was no discharge from the ears, nose, or mouth. He examined the boy most carefully, and there was no sign of peeling whatever. There was a small sore at the corner of the mouth; he had noticed it some days before. It was a small sore, perfectly dry on the surface—one could hardly call it a sore, it was a sort of small excoriation. There was no sore whatever on the ear.

His Lordship.—In your opinion what was his condition in reference to the discharge?

Witness.—In my opinion he was perfectly free from infection, and quite safe for discharge.

Examination continued, witness said if a sore on the body had not occurred during the acute stages of the disease he would not attach much importance to it. He agreed with a great deal that Dr. Marsden had said, but he did not agree that there was danger about the sore on the mouth. On the suggestion of Dr. Hope he examined the boy at his home on the 7th January. He found the feet were not peeling, the sore on the mouth was a little more extensive, and there was a small sore on the ear.

Mr. Tobin.—Have you any doubt that Reginald was discharged in an infectious state?—I have doubts in my own mind.

Have you any doubt that Reginald gave it to the other children?—I have doubts, because it is quite possible the children may have got it from some other source.

Dr. Wm. Hanna, assistant Medical Officer of Health for the Port of Liverpool, expressed the opinion that Dr. Archer could not have done more than he did. In cross-examination, he said he did not agree with Dr.

Archer that a sore arising at the height of the fever would make any difference as regarded the discharge of the patient.

Dr. Nathaniel Edwards Robert, visiting physician to the Park-hill Hospital, and lecturer on infectious diseases at the Liverpool University, said that in the present state of knowledge, cases might be returned home where the infection of scarlet fever lurked in some way which had so far eluded the medical profession. Dealing with the case of the boy Reginald Evans, witness explained that, notwithstanding that he believed the sores were practically negligible, he would probably have kept the case in the hospital two or three weeks longer, in order to protect himself. The infection of scarlet fever was very obscure.

Dr. R. S. Marsden, Medical Officer of Birkenhead, said he considered that Dr. Archer was perfectly justified in the action he took.

Dr. Carter and Dr. Gemmell corroborated, the former adding that he did not consider that the external sores described had anything to do with the spread of infection.

His Lordship, after pointing out the great importance of the case to the public, and especially to public corporations, left the following questions to the jury, to which their answers are appended:—(1) Was there any want of reasonable skill and care in and about the discharge? Answer.—Yes. (2) Was it in consequence of such neglect that the plaintiff suffered damage? Answer.—Yes. (3) Was there any neglect on the part of the matron or nurses in examining and reporting? Answer.—No. (4) Was it in consequence of such neglect that the plaintiff suffered damage? Answer.—No. (5) If Dr. Archer was negligent, was there any undertaking implied by the defendants with the plaintiff that Dr. Archer should act with reasonable care and skill, in and about the discharge of plaintiff's son? Answer.—Yes.

His Lordship said that he left the last question with considerable hesitation, because he might have to deal with that point on his own responsibility. Damages were agreed at £55.

Judgment was reserved in order that the question of the liability of the Corporation might be argued.

Walton, J., in giving judgment on May 30, said: This case raised a question of considerable difficulty. The facts were not disputed. (His Lordship stated them as above, with the findings of the jury thereon.) If the last finding stood, there could be no doubt that his judgment must be for the plaintiff. But the question he had to decide was whether there was any evidence of such a duty on the part of the defendants as was expressed by that finding. It had been suggested that in the circumstances of this case the defendants became absolutely bound not to discharge a patient in a condition to spread infection. To hold this would lay a very serious burden on hospitals. For instance, it was almost impossible in cases of scarlet fever to be quite sure when the patient ceased entirely to be in an infective condition. He saw no reason for holding that this obligation was cast upon the defendants apart from any question of negligence. What, then, was the duty they undertook? In his opinion it was the duty of those persons who manage hospitals to do so with ordinary skill and care. He would assume that the defendants were entitled to charge the plaintiff for his son's treatment under the provision of the Public Health Act, 1875, but he did not think that fact altered the obligation. They did not undertake the duties of a medical man, nor to give medical advice, but they did undertake that the patient should have competent medical advice and assistance. It was admitted that Dr. Archer was a competent medical man; and if in this instance he was negligent, the corporation was not liable for his negligence. It was said that he was their servant for the purpose of discharging the child. He was, no doubt, an officer of the corporation, and in certain cases had to obey them. In their "Rules for Officers and Servants" the corporation said:—"The visiting physician shall be responsible for the treatment of the patients from the beginning to the end of their stay, and also for their freedom from infection when discharged." Again, "the matron (in the absence of the Resident Medical Officer) shall be responsible for the discharge of patients under the instruction of the visiting physician." In this case the matron had discharged the boy under Dr. Archer's instructions. In his opinion he acted as adviser to the corporation, and did not discharge as their servant. Of course, in discharging the boy under the advice of a competent medical man the defendants had not been guilty of negligence. There was no cause of action here, and no evidence to go to the jury in support of their finding. Judgment must be for the defendants, with costs.

Dried Milk.—At Westminster Police Court, on May 12th, the Army and Navy Co-operative Society was summoned by the Westminster City Council for selling dried milk from which 30 per cent of the fat had been abstracted, thus injuriously affecting its quality, substance, etc. Mr. Rotton, solicitor, who supported the summons, said a tin of dried milk was purchased at the stores on March 28th. A label on the tin set forth that it contained four quarts of fresh milk reduced to a powder by a special process. The tin also bore an analysis, which was approximately correct. The ground of complaint was that, whereas the proportion of butter fat should have been 25 per cent, the analyst's certificate for the sample submitted to him showed that the proportion was 16·30, and that at least 30 per cent of the original fat had been abstracted. The question thus was whether the description on the label was sufficient. The public analyst for Westminster, Mr. C. E. Cassal, said that he analysed the sample produced, and had certified as stated. None of the natural fat should be abstracted in the process of drying milk. Cross-examined by Mr. Biron, counsel for the defence, he said that the absence of fat would not be due to evaporation; it was deficient before the drying process began. Mr. Biron contended that a sufficient disclosure had been made; the public were not merely told what they were buying, but the actual ingredients. The magistrate observed that the uninitiated of the public did not know the component parts of milk. There was a standard. Mr. Biron.—But we tell the public exactly what they are buying. Mr. Curtis Bennett.—Milk is milk, and there is a standard for it. This is dried milk *minus* something which ought to be in it. Mr. Biron stated that the Army and Navy Stores, directly the summons was taken out, stopped the sale, pending the hearing of the case. They were not the manufacturers of the article, which was known as Klonol. The magistrate said that was a proper step; he did not suppose any more of the milk would be sold without further notice to the purchaser; and, that being so, he should only inflict a nominal penalty of 10s. and £2 2s. costs.

In another case by the same Council, heard at Bow Street (April 10), a warranty being proved, the summons was dismissed. Resulting therefrom, on May 15, C. A. & L. Gates, trading as the West Surrey Central Dairy Co., were summoned for giving a *false warranty*. The defendants stated that they took every care to keep the various grades of dried milk separate; that the milk was delivered to them in barrels, marked in stencil "Full cream," "Half cream," or "Separated," as the case might be, and that it was transferred from such barrels into different coloured cardboard boxes, pink boxes being reserved for full cream milk, in which boxes the milk was sent for sale to their customers. They stated that in the present case a mistake must have been made in putting some of the half-cream milk into the pink boxes, but that, in future, they were going to have the various grades of milk kept in different locked bins, so that a mistake could not arise again. They further stated that they had given instructions to their packers that care was to be taken that the milk was put into the proper boxes, and that this was the only complaint or proceedings instituted during the nine months they had been trading. The Magistrate, in view of these facts, thought the defendants had reasonable grounds to believe the statements contained in the Warranty were true, and dismissed the summons on the payment of £2 2s costs by the defendants.

Reducing the Quality of Milk.—A farmer who pleaded guilty at Glasgow Sheriff Court to supplying milk deficient in fat and containing added water, stated that if a farmer wanted to get 20s. in the pound out of his business, he had to take all he could get out of the milk.

Cocoa-nut Oil in Margarine.—At the hearing of a case at Clerkenwell Police Court, on May 2nd, it transpired that some margarine recommended as "St. John's butter, guaranteed pure butter from the Fancy Creamery, Buckinghamshire quality, where the finest cows graze on the richest pastures," contained 80 per cent. of butter and 20 per cent of foreign fat, some 10 per cent of which was cocoa-nut oil. Mr. Otto Hehner, F.I.C., said it was the nearest copy of butter yet produced, and might be passed as such by analysts.

Milk Warranty—Straining.—At the Lambeth Police-court, before Mr. Hopkins, on May 1, Whiteman and Cox, Limited, milk contractors, were summoned by the Camberwell Borough Council for selling, to the prejudice of the purchaser, milk which was not of the nature, substance, and quality of the article demanded. Courthope Munroe appeared in support of the summonses, and W. T. Ricketts for the defendants. It was stated that the defendant had contracted with the Camberwell Board of Guardians for the supply of milk to the Camberwell Workhouses and Infirmary.

Four samples were submitted to the Public Analyst, who certified that two were genuine milk, but that the other two showed a deficiency of fatty solids of 11 per cent and 27 per cent respectively. Mr. C. S. Stevens, Clerk to the Guardians, produced the contract with the defendants, and said the supply under it commenced on March 26 last. The milk was to be "of such quality as would produce at least 10 parts of cream in every 100 parts when tested." For the defence, Mr. Ricketts said the Public Analyst's certificate did not say this milk did not contain 10 parts of cream to every 100 parts of milk. Supposing the milk answered the description in the contract—and there was no evidence that it did not—then no prosecution would lie against the seller. Mr. Hopkins intimated that he could not uphold such a contention. The defence was then set up that the milk in question was purchased by the defendants from farmers under warranties as to its purity, and that it was supplied to the Guardians in exactly the same state as that in which it was received.

In the course of the evidence of some further witnesses, it transpired *that after the receipt of the milk from the farmers it was taken to the defendant's depôt at Clapham and strained.* Mr. Hopkins expressed the opinion that that fact rendered it impossible for the defence to succeed. It had to be shown that the milk was delivered in the same state as it was received. Mr. Ricketts replied that the straining was a necessary act to remove the dirt from the milk. Mr. Hopkins said he had to decide whether or not the defendants had proved their statutory defence of a warranty. In order to do that they had to prove two things—first, that they had received the milk from a particular person under a warranty as to its genuineness; and secondly, that they did nothing themselves to alter it—that they sold it, in fact, in the same state as they received it. The defendants had proved the first part of their defence, but they had failed absolutely to prove the second. The defendants would have to pay a penalty of £10 upon each of the two summonses, together with £3 5s. costs—£23 5s. in all. Mr. Ricketts asked the magistrate if he would state a case. Mr. Hopkins replied: I find as a fact against you that they did not deliver it in the same state that it was received. Mr. Ricketts: Won't you go further and say, "Because they strained it?" Mr. Hopkins: I won't qualify it in any way. Mr. Ricketts: Then that would put me out of Court.

SAUSAGES CONTAINING BORACIC ACID.—At Trowbridge Petty Sessions, on May 10, Messrs. Case and Sons were fined £1 and costs for selling pork sausages not of the nature, substance, and quality demanded, by reason of the fact that they contained 105 grains of boracic acid per pound. For the defence it was urged that the large proportion of boracic acid was due to bad mixing.

VINEGAR FROM UNMALTED GRAIN.—At Mansfield Police-court on March 16, George Dufty, grocer, was convicted for selling, as malt vinegar, a mixture made partly from malted and partly from unmalted grain.

REVIEWS.

A TREATISE ON PLAGUE. Dealing with the Historical, Epidemiological, Clinical, Therapeutic, and Preventive aspects of the disease. By W. J. Simpson, M.D., F.R.C.P., D.P.H., Professor of Hygiene, King's College, London; Lecturer on Tropical Hygiene, London School of Tropical Medicine; formerly Health Officer, Calcutta. Royal 8vo. Buckram. Pp. xxiv. and 466. With maps and illustrations. Price 16s net. Cambridge University Press Warehouse, 1905.

This excellent volume will fully repay careful study, and we think that Professor Simpson is to be heartily congratulated upon his achievement. The subject is considered very fully from all points of view, and the familiarity of the author with matters relating to plague impresses itself strongly upon the reader. Professor Simpson feels that the importance of the prevalence of plague in India has not been brought home to the English people, and in his preface he dwells on the economic importance of the outbreak, and on the need for a properly organized sanitary service suited to the needs of India.

Part I (chaps. i–iii.) relates to the history and distribution of plague. Its history is traced from the early centuries to the nineteenth, a special chapter being devoted to India. Overland trade routes, passing through endemic centres from the East, are shown to have been the chief factor in the dissemination of plague, and hence through Europe by the trade routes of the Hanseatic League. The present pandemic is attributed to the endemic centre in Yunnan, the spread by trade routes through Canton and Hong-kong, and thence overseas, being described in detail. Professor Simpson emphasizes the fact, that whereas plague was formerly spread overland, it is now carried by sea, consequent upon change in the trade routes.

Part II (chaps. iv–xi.) is concerned with the epidemiological aspect of plague, and includes a detailed account of its bacteriology. A belief in the relationship of epi-zootics to plague is traced to remote times, and striking curves of rat mortality and human plague cases in Bombay illustrate this point. The ready transmission to many animals by feeding suggests a similar factor in the conveyance of the disease to man. Depressed social conditions, lack of efficient sanitary administration, and the strong influence of season are touched upon in considering the etiology of epidemics, and the tenacity and transportability of plague are emphasized. A chapter on the great variations in virulence of epidemics is followed by an account of the conditions which foster the disease, special prominence being given to poverty, exceptionally insanitary conditions, and close association with animals in endemic centres. An appalling picture is drawn of native housing in Bombay and Hong-kong. Dealing with diffusion and modes of dissemination, many examples are given of conveyance by human beings, household effects, merchandise, and animals, the most frequented trade routes forming the chief lines of spread. The importance of rats as disseminating agents is strongly dwelt upon, and the modes by which they may infect man, whether by parasites, infected food, or contact, are discussed.

In Part III (chaps. xii–xvi.) Professor Simpson deals with plague in the individual. Morbid anatomy and pathology are considered in detail, with illustrative autopsies and bacteriological investigations. As regards channels of infection, prominence is given to the selective action of the bacillus, and doubt is thrown upon the relative frequency of infection through the skin. An exhaustive chapter on the clinical aspect is well illustrated by temperature charts and photographs. The value of bacteriological methods of diagnosis is urged, but the serum test is regarded as a doubtful aid. Statistics of the results of treatment by various sera are disappointing, although some batches of cases show a lessened mortality.

Measures for the prevention and suppression of plague are dealt with in Part IV (chaps. xvii–xxi.) After reviewing the very thorough measures adopted in Italy in the fourteenth century, and later in England, Professor Simpson passes to the procedure instituted by the Venice and Paris conventions for the prevention of importation of plague. He devotes some space to the Clayton process for disinfecting shipping, and, later, for buildings also, and seems much impressed by its merits. Prominence is given to the use of Danysz's bacillus as a rat exterminator. A description of the outlines of the necessary organization for combating an actual outbreak in a locality, follows, and special attention is devoted to segregation, evacuation, and disinfection. Prominence is given to Haffkine's prophylactic in the chapter on inoculation. The conclusions of the Indian Plague Commission are stated, but one misses any detailed statistics in support of the favourable impression recorded.

The author concludes with an indication of problems for future investigation, and his long and intimate experience of plague gives weight to his suggestions. Indian plague returns for 1904 and the provisions of the Paris Convention form appendices to the volume.

Professor Simpson can lay claim to speak with authority upon the subject with which his work deals. He has treated a very important problem in an exhaustive and attractive manner, and the work is strongly to be recommended both to the student and to the administrator.

PURE DRINKING WATER, ITS IMPORTANCE, AND HOW TO OBTAIN IT. (London: J. Defries & Sons, Ltd. Price 3d.)

This pamphlet is really an advertisement of the Pasteur Filter, but, we select it for notice because it appears to comply with the requirements that ought to be, but seldom are, fulfilled by prospectuses of such articles. It is for the public convenience that such descriptions should be trustworthy, because the makers know, or ought to know, more about their products than other people. The condition of their being so is that they be confined to matters of demonstrated fact and inferences proper to be drawn from them. The reason why such prospectuses are for the most part unfit, if not for publication, at least for serious review, is that they are rarely restrained within such limits, and often contradict ascertained knowledge. Always unjustifiable, such practices are particularly mischievous in the case of appliances or products which a lay public must take largely on trust. Messrs. Defries' prospectuses of appliances for sterilizing and disinfecting have now been before the medical world for nearly twenty years. It is no more than just to them to say not only that they have been free from misrepresentation or exaggeration, but also that they have stimulated substantial improvement in the practice of disinfection. There are points in that art of which the essential importance was not realized by the profession until attention was drawn to them by Messrs. Defries' publications. It was no small distinction that, as shown in the Report of the Conjoint Laboratories' Investigations of Water Filters, Messrs. Defries alone among the filter makers of that date put forward the carbon filter which they were making with the express statement that it offered in itself no protection against water-borne disease. The statements which they have published on behalf of the Pasteur Filter, of which the working came subsequently into their hands, have been equally accurate, and the present pamphlet may be commended as giving a fair and temperate statement of the facts. Practical British experience has amply confirmed the mass of French evidence on which the Pasteur filter was first introduced. It has been shown in actual practice to give a real protection against water-borne disease. Some of the grounds on which this statement is made are shown in this pamphlet; and as illustrating not merely the results obtained by Pasteur filtration, but also the enormous mass of evidence which is required to justify a safe inference, it is of real interest to Public Health literature.

MR. JAMES MANSERGH, the eminent engineer for water and sewerage schemes, died recently. His greatest work was the Elan Valley Water Scheme for Birmingham.

PROCEEDINGS OF THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTITUTED 1888. INCORPORATED, 1891.

North-Western Branch.—An Ordinary Meeting of the Branch was held at the Chemical Club, Victoria Hotel, Manchester, on Friday, May 26th. Present: Dr. J. B. Wilkinson, President (in the Chair), Drs. Garstang, Vacher, Peck, Niven, Wheatley, Coutts, Laird, Greenwood, Hayward, Martin, Sergeant, J. A. Harris, Deans, K. Fraser, and Meredith Young.

The Hon. Sec. reported his attendance at a Meeting of the Jubilee Committee of the Society held in London on the 24th inst. It was resolved that the Branch pay second class return fare to the Hon. Sec. for his attendance in London.

Dr. Herbert Peck read a short communication relating to "*Duties of Medical Officers of Health and Medical Officers to Education Committees in cases of Infectious Illness,*" and a short discussion followed.

Dr. A. W. Martin then read a paper on "*The Influence of Privy-Middens and Water-closets on Zymotic Diarrhœa and Enteric Fever.*"

A discussion followed, in which Drs. Peck, Wheatley, Vacher, Coutts, and Sergeant took part. Dr. Martin suitably replied, and a vote of thanks to him for the reading of the paper concluded the meeting.

Yorkshire Branch.—A meeting of the Branch was held at Keighley on Thursday, the 15th of June, and with the kind guidance and hospitality of Dr. Scatterty, the President, a most enjoyable afternoon was spent.

The Members first visited the hospital and made a detailed inspection of this fine new establishment, now being completed by the erection of a pavilion for the treatment of diphtheritic cases.

The party then drove to the Corporation filter beds at Oldfield, where much interest was shown in the explanations given by Mr. Hopkinson, the Borough Surveyor, who demonstrated the method of adding ammonia alkali to the water to prevent plumbo solvency, and showed the after treatment through coke beds to the sand filters, and ultimately through polarite. The process of washing the sand of the filters was then seen in actual work. At this place refreshments were kindly provided and served by Mrs. Scatterty, and the party then returned to Keighley by way of the Brontë country, through Haworth.

There were present, Drs. Scatterty (Keighley—the President), Angus (Bingley), Burman (Wath-on-Dearne), Chrispin (Castleford), Erskine (Goole), Evans (Bradford), Gibson (Wakefield), Hargreaves (Wetherby), Hunter (Pudsey), Low (Dewsbury), Milburn (County Hall, Wakefield), Neech (Halifax), Smith (York), Thorp (New Mill), Wade (Wakefield), and J. R. Kaye (Wakefield—Hon. Sec.)

JAPANESE PRECAUTIONS AGAINST TYPHOID.—F. A. McKenzie, in his recently published book; "From Tokyo to Tiflis," says, "Doctors went ahead of the troops and tested each well and stream, marking them. Woe to the soldier who dared to slake his thirst with unboiled water from a well forbidden by the sanitary officers."

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SPECIAL NOTICES FOR THE MONTH.

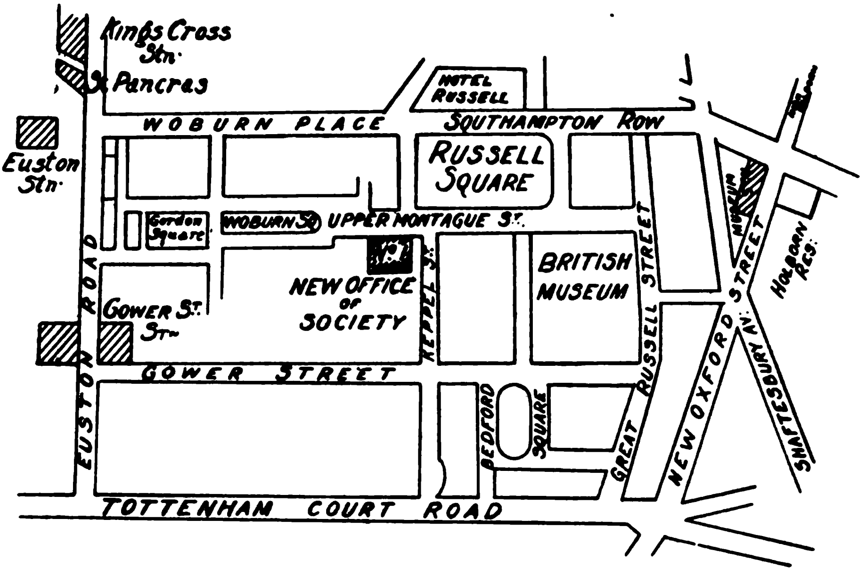
JUBILEE OF THE SOCIETY, 1905-1906.

In connection with the Jubilee of the Society arrangements are now being made to hold an International Congress and Exhibition dealing with *Food and Food-stuffs, etc.*, in London during the summer of 1906. The following sections have been decided upon :—

Economic—
  Supply, Transport, etc.
Chemical and Bacteriological.
Physiological.

Further details will appear in subsequent issues of *Public Health.*

The new premises of the Society, **No. 1, Upper Montague Street, Russell Square, London, W.C.** The house is at the N.W. corner of Russell Square, and may be conveniently reached from Tottenham Court Road, and by omnibuses running through Russell Square between King's Cross, St. Pancras, Charing Cross, Victoria, and Waterloo stations.



On the ground floor are the library, reading room, and Executive Secretary's office ; on the second floor are rooms fitted up for meetings of Council and of the Society.

All communications should be addressed to this address.

Telegraphic Address: "EPIDAUROS, LONDON."
Telephone: 7,779 GERRARD.

Continued on p. xii.

MEETINGS OF THE SOCIETY.

NORTHERN BRANCH.

October 27th. At Newcastle-on-Tyne.

WANTED.—Copies of the Indices for vol. xv. and xvi. of *Public Health*; and of Nos. 1 and 2 of vol. xvi. The Executive Secretary requires a number of the above to complete sets and is prepared to pay full price.

RETURN CASES OF SCARLET FEVER AND DIPHTHERIA.

SCHEDULE OF ENQUIRIES.

Additional copies of the Schedule may, at any time, be obtained free of charge from the Hon. Secretaries, 1, Upper Montague Street, Russell Square, W.C.

PASTEUR FILTRATION AND ENTERIC FEVER.—Lieutenant-Colonel H. H. Johnston, C.B., R.A.M.C., on enteric fever among the *personnel* of No. 4 General Hospital, Mooi river, Natal, with reference to drinking water, appears in the April number of the *Journal of the Royal Army Medical Corps*. Some years ago Lieutenant-Colonel Johnston conducted in the Public Health Laboratory of the University of Edinburgh some experiments on the relative efficiency of filters from the point of view of removing micro-organisms from water. He found that the Pasteur-Chamberland filter was superior to the other filters (of the bougie type) examined, the water being completely sterilized during six weeks' continuous filtration. As a result of his experience in S. Africa, he concludes that his laboratory experiments are borne out in actual practice. Enteric had been very prevalent in No. 4 Hospital, but during the 26 months following the introduction of a large automatic syphon-action Pasteur-Chamberland filter, only 8 cases occurred. Lieutenant-Colonel Johnston points out that filters that require daily sterilization are impracticable in field service, and as a matter of fact it is never done in actual practice, so that only those filters, such as the Pasteur-Chamberland, which work continuously, *i.e.*, which do not require to be sterilized at short intervals, are of any real utility and value.

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Continued on p. xiii.

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CONTENTS.

No. 11, Vol. XVII., August, 1905.

SPECIAL ARTICLES—

	PAGE
THE PUBLIC HEALTH ASPECT OF MOTORING (*Herbert Jones, D.P.H.*)	683
SOME CRITICISMS (*F. Graham Crookshank, M.D. Lond.*)	692
DIPHTHERIA (*H. Renney, M.D., D.P.H.*)	704
THE INFLUENCE OF PRIVY-MIDDENS AND WATER-CLOSETS IN DIARRHŒA AND TYPHOID (*A. W. Martin, L.R.C.P., D.P.H.*)	709
"CAMBRIDGE — THEN AND NOW" (*Bushell Anningson, M.A., M.D.*)	715

ANNOTATIONS—

	PAGE
THE AUTOMOBILE AND TUBERCULOSIS	691
TUBERCULOSIS OF FOWLS	691
PROFESSOR KOCH ON TSETSE FEVER	708
DETERMINATION OF NITRITES IN WATERS (*W. P. Mason*)	714
PREVENTION OF SMALL-POX	726
THE STEWART PRIZE	729
ASSISTANT MEDICAL OFFICER OF HEALTH FOR THE WEST RIDING	729
MOTORS AND HYGIENE	729
SCHOOL HYGIENE	730

Continued on Page vii.)

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CONTENTS—*continued.*

ANNOTATIONS (*continued*)—

PAGE

Parliamentary Notes - - 732

The Staff of a Health Department - - - - 733

Decrease in the Population of Small Towns - - 733

Midwives Act - - - - 734

Acute Glanders in Man - 735

Pathological Material sent by Post - - - - - 738

The French Academie de Medecin Award - - 742

LAW REPORTS—

Jackson *v.* Wimbledon Urban District Council - - 736

Sandys *v.* Jackson - - - 736

LAW REPORTS (*continued*)—

PAGE

Wincanton Rural District Council *v.* Parsons - - 737

Arsenic in Glycerin - - 738

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH, THE—

Provincial Meeting - - 739

Northern Branch - - 742

Eastern Counties Branch - 742

CURRENT PUBLIC HEALTH LITERATURE - - - 743

NOTICES - - - - xi, xii, xiii

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PUBLIC HEAL

The Journal of the Incorporat
Medical Officers of H

Vol. XVII. No. 11.

THE PUBLIC HEALTH ASPECT O

By HERBERT JONES, D.P.
Medical Officer of Health, Hereford Combined

The influence of bicycles upon the public he
twenty-five years has never, I think, been suffi
only have workmen and those whose daily work
been able to live some distance from it and
districts, not only have shop assistants and oth
to live near their work been able to get more e
but in the actual administration of the Public H
has played a most important part. I ventur
before the end of the next quarter of a century
our indebtedness in the same direction to the
that a vast amount of useful and permanent
out in the past by Medical Officers of Health
bicycles nor motor cars, but it is being realiz
the duties of a Medical Officer of Health are bec
closely associated with purely epidemiological i
less with actual sanitary work. This has been
great measure by the improved technical training
and although the Medical Officer of Health mu
actual controlling head of the Sanitary Depar
rely much more than formerly upon the powers
inspectors, though he himself must be compe
detect obvious omissions, and to draw correct
reports. But as regards investigations of an
logical character, a medical training is absolutel
advance is to be made in our knowledge of the

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* Read at the Annual Provincial Meeting of the Soci
of Health, at Lancaster, July 1st, 1905.

of disease, and therefore in our efforts at prevention, these investigations will have to be carried out by Medical Officers of Health and upon general and systematic lines. In towns this can readily be done, and indeed is being done at the present time, but in the rural districts, where there is a large mass of material still to be dealt with, the population is scattered over such a large area that it has been found next to impossible to carry out any work of the kind indicated.

There are in particular two directions in which the Medical Officer of Health who has the control of a large rural district finds himself handicapped against his colleague in a town. First of all, in the investigation of an outbreak of an infectious disease which may be due to school influences. If these outbreaks are to be successfully combated, we must search out the "missed" cases. In the case of diphtheria we are able to call to our aid the bacteriologist, but with whatever disease we are concerned, it is of the first importance that we should make our inquiries and conduct our search at the earliest possible moment. In a town this can easily be done, but in a large country district, where the Medical Officer of Health may have to travel ten or fifteen miles to a school, he finds his difficulties almost insurmountable, and the outbreak which he might have checked is kept alight. On one occasion, I myself had information of an outbreak of scarlet fever sixteen miles from Hereford. Within an hour and a half I was at the schools concerned, and in a few hours had discovered in their homes two convalescing children, whose parents had no idea that they were ill at all. We had no more cases of the disease. In carrying out this investigation I had to travel between fifty and sixty miles, a journey which it would have been impossible for one horse to have accomplished without a rest, but I managed it by motor without appreciably affecting my routine work.

The second direction in which the motor will materially assist the Medical Officer of Health in rural districts is in the investigation of the surroundings of all persons who die from consumption or from cancer. With the ordinary means of travel at our disposal this is quite a hopeless task, but it is one which ought to be performed, and if carried out upon proper lines might lead to the most important results. In my districts in Herefordshire I have tabulated the deaths from consumption and cancer for each of the 126 parishes which have been registered in the past sixty years, and I want to know why it is that in some parishes these diseases are almost unknown while in others they appear to be endemic. I can only obtain an answer by investigating the cases as they occur now, and on the spot.

But the administrative side of the public health aspect of motoring is by no means the only one, though it appeals to me personally.

Consider the effect upon the housing question in large towns of taking away from the centres of those towns all horses and carriages and carts and wagons. I do not refer altogether to the advantage of doing away with the huge mass of offensive material which is inseparably connected with horses, but I mean that if every horse with its appurtenances were taken away, say from London, you would have set free an amount of ground space which would enable you to house that large class of persons who, either from lack of means or from other causes, are compelled to live within easy reach of their work. It may be said that a motor takes up as much room as a carriage. But not so much as a horse and a carriage. Moreover, a horse must be stabled within a reasonable distance of its work; a motor can be stabled ten miles away.

I can quite imagine some persons saying that no increase in the facilities of administration, no indirect solution of the housing question, no lessening of the stable nuisance in towns, and no decrease in the expenditure upon scavenging in towns, can compensate for the intolerable amount of dust which appears to be inseparably associated with motoring. I think we can very well leave the solution of this dust question to the engineers and to the chemists. The motor engineers are now, I believe, paying particular attention to the design of cars with a view to lessening the enormous amount of draught created by a car; road engineers are at last realizing that roads can be made in a costly, unscientific manner, and that they can also be made scientifically at little or no extra cost, but with the production of a highway which will not be slimy mire in wet weather and pulverized horse manure in dry. With the aid of the scientist they are discovering what class of stone can bear the greatest stress, and that there is to be found binding material which is infinitely superior to the finely ground dust which has been carefully swept up to the sides of the road, and there left until such time as it can be utilized as a "top dressing," to undergo still further pulverization. They have long admitted that the destruction of a roadway is accomplished chiefly by the hammer hammer of the iron-shod horse, and some of them are beginning to appreciate that the horse droppings, and especially the urine, are an important element in effecting the disintegration of the best made macadamized road. This brings me to what is to my mind the most important effect which motors are to have upon the public health. I mean by the lessening of disease which is caused by the wholesale dissemination of organic material contained in horse manure. Professor Delépine has made most exhaustive and painstaking investigations into the cause of extensive outbreaks of diarrhœa in Manchester, and he has shown that one of the principal vehicles of infection is manure. To quote his own words, "Epidemic diarrhœa of the common type occurring in this country is apparently, in the great majority of instances, the result of infection of food by bacilli belonging to the colon group of bacilli, and which are derived from fæcal matter." "Milk," he says, "which is the most common carrier of the cause of epidemic diarrhœa in infants, is very frequently infected at the farm, or (through vessels) in transit. It may also be infected at the retailer's, or at the consumer's house." The preventive measures against epidemic diarrhœa advocated by Professor Delépine are such as to secure cleanliness of cows, dairy hands, cowsheds, milk vessels, etc. Similar measures, he adds, are also needed in other places with regard to all things and persons coming in contact with milk or any other article of food, manufactured or not. In the same connexion Dr. Arthur Newsholme advocates "Greater domestic and municipal cleanliness; involving as this will the reduction of dust both in houses, courts, and streets, and the substitution, both domestically and municipally, of wet cleansing and more frequent cleansing for the dry and infrequent cleansing now in vogue." With these opinions of two such recognized authorities in mind, is it too much to say that one result of the replacing of horses by motor cars would be the reduction of the amount of the appalling amount of fatal infantile diarrhœa which is recorded year by year in our large industrial centres: the solution, or partial solution, of a problem which seems to some of us well nigh insoluble?

I think I have shown that the advent of the motor car is to have an appreciable effect upon the public health of this country in a most direct manner. Medical Officers of Health will be able to carry out more extended investigations, and administer the Public Health Acts more thoroughly than they can do at present, when three-fourths of their time is being spent in travelling about their districts; the housing of the poor in towns will be rendered easier by the closing of the town stables; not only the comfort but the healthfulness of those obliged to live in towns will be increased by the improved sanitary condition of the streets, which at present are fouled by horses to such an intolerable extent; and lastly, the improvement in the surface of the roads which engineers will be compelled to make cannot help but be beneficial. We have put up with bad roads long enough, and if motors had not come we should have continued to put up with them. As it is we shall not be satisfied to allow them to remain unaltered. Of the indirect influence of the motor much might be said. It will take the rich or the comparatively rich man to his house in the country, ten miles away from his business, thus releasing ground space for the poorer town dwellers, and it will enable perishable commodities to be more readily distributed, to the advantage of the small farmer as well as to the consumer. Motor cars are going to be of quite as much benefit to the country districts as they are to the towns.

DISCUSSION.

Dr. E. Sergeant said the roads between Lancaster and Preston were really as good as modern science could make them. Motoring was a luxury on a day like the one on which they met. His opposition to motoring had been considerably reduced by the pleasant drive he had had from Preston. He did not think that surveying science could effect much improvement upon the roads he had that morning had a charming run over. Still, motoring covered people with dust, which they inhaled, and which covered vegetation forty or fifty yards on each side of the road. Such dust must be a distinct danger. We could not possibly keep roads free from manurial deposit. Cars had a cyclonic action, and the dust from the roads had a bad effect upon human beings, as well as upon animals and vegetation that were within forty or fifty yards of the roads. Vegetation was distinctly depreciated in consequence of the immense deposits of dust. He was of opinion that at the present time motoring was distinctly dangerous, although science might come in to modify the danger in future. Until roads were made fit for motor cars, both as to their surface and width, he must maintain that motoring was dangerous to health. That motoring as some people indulged in it was dangerous to life and limb could not be denied, and he had some sympathy with the Marquis of Queensberry, who thought he would be justified in carrying a gun and shooting some motorists at sight. The whole subject was well worth watching. If they could remove or reduce the disadvantages of motoring to a minimum they might in a few years be convinced that motors had come to stay, and wonder why they had been so suspicious. There might be some slight advantage in motoring in respect to public health, if the Medical Officers did not scorch, and if the comfort and convenience of other people were considered. There were advantages and disadvantages no doubt, but he considered the disadvantages were greatest.

Dr. J. J. Weaver said the dust question was very much a question as to the make of the cars, and road engineers and car makers would in time remedy that evil. He deprecated the crusade against the police and their methods, and said there were many reckless and careless motorists who ought not to be on the road. It would be an advantage if the police cleared the roads of such men. There was no sense in a man summoned for driving at 30 miles an hour saying he was only travelling at the rate of 10 or 15 miles an hour, because anyone ought to be able to tell the difference between the two speeds. His sympathies were with the police, and he hoped they would succeed in clearing the roads of the unmannerly men who drove motors to the discomfort of others on the road. The indirect advantages of motoring were to his mind greater than the direct effects. If horses were partially abolished some men who went to agricultural shows would spend less time in drinking bars, some of the evils of racing would disappear, and the half-drunken cabman would be superseded by a much smarter fellow. Motors sharpened the wits and improved the intellectual type of men engaged in locomotion. To take an unreasonable objection to motors was useless and childish.

Dr. William Berry said he liked to ride behind something that had life, that he could touch up with a whip; and that he could rely on his horse better than some of his medical friends with cars could be relied on. Nevertheless, he believed that motors had come to stay, though engineers must minimize the damage to the roads. The amount of dust, too, which caused irritation of the chest, must be lessened.

DR. J. H. WILSON advocated the use of motor cars for Medical Officers of Health, and declared that breakdowns would become less rare as people became more used to the cars. He found that by using a motor car for his public work he had more time for recreation and for attention to other work. His own health was considerably improved, and he believed motoring, by finding something for the leisured classes to do, would contribute much to their general health.

DR. C. B. HEWITT, Chairman of the Public Health Committee of the Cheshire County Council, spoke from the point of view of the public. He considered the discussion a valuable one, because it had been shown that a great responsibility rested upon engineers and others to devise means to diminish the amount of dust on the roads. He hoped that medical men possessing cars would set an example to other motorists in managing them. Undoubtedly a motor car was a rich man's luxury at present, though many medical men told him they found a motor car cheaper than a horse.

DR. MEREDITH YOUNG said: Motors have done good by drawing serious attention to the dust problem. To deal effectively with this in these days of limited water supply, one must adopt a more lasting and cheaper method than dust-laying by water. The amount of water requisite for efficient dust-laying is greater than many persons imagine, and its effects are in the main injurious rather than beneficial from a public health point of view. One ton of water (224 galls.) will lay the dust over 400 square yards of macadamized road, or over 600 sq. yds. of paved streets. Taking a 24 ft. road this means that for one mile of it we require about 8,000 galls. of water to lay the dust on a macadam road, and about 6,000 for a paved road. With water it is necessary to use it on an average on 120 days per year. This means that we must use for macadam close upon a million galls., and for paved roads 700,000 galls. per mile yearly. Large numbers of preparations consisting of dust-binding oils emulsified with some watery solution have been introduced for the purpose of road watering and dust laying. The application of these is costly, owing mainly to the high cost of the preparation. Although the oil contained in the preparations costs little, the necessity of preparing the emulsion in a special works with sufficient care to render it stable, the necessity of transporting the emulsion and of providing special receptacles, makes the preparation costly to apply. The drawbacks connected with the high cost have been overcome in patents recently obtained by a Manchester man, who attaches to the watering cart a simple appliance through which water and oil in regulated proportions are allowed to pass before distribution over the road surface. This appliance consists simply of a small emulsifying machine driven from the axle of the watering cart, and which has the effect of reducing the oil to a very fine state of sub-division and forcing it out on to the road by the aid of a stream of water. The same effect, namely, the application of an emulsion of oil and water to the road surface, is got by the use of this cart, as by the application of any of the ready-made dust-laying preparations. But the necessarily considerable cost of these is, by the method I have alluded to, reduced to the mere cost of the crude oil applied. The cost of this new process for materials is thus only about one-third of those in which a ready-made dust-laying composition is used. Water of course

has to be used as a medium, but the amount re
number of applications can be reduced to nearly
tions yearly as compared with 120. The importa
dust-laying is likely to be emphasized in view o
typhoid fever at Bridgend, stated by the Medical
largely due to the dissemination of infection by
course of the large part probably played by du
zymotic enteritis. The dust problem leads us st
us to think of the more extended application of
macadam. The hygienic advantage of the pav
adamized is sufficiently appreciated in a gathe
Douglas Galton many years ago insisted upon th
initial cost may be roughly put as follows (and I m
trouble to have the figures verified by a Surveyor of
Macadam, 21 ft. wide, 4s. per sq. yd. Tar
foundation, 2s. 6d. per sq. yd. Tar Macadam,
5s. per sq. yd. Granite setts depends on the lo
district, including foundation, 10s. The life of th
named are with average traffic: Macadam, 3 or
3 to 10 years, and granite setts 15 to 30 year
maintenance is roughly: Macadam, 2½d. or
madacam, 4d. to 9d., and setts ½d. to 1½d. The
Stockport is: Macadam about 21s. per mile week
includes cost of sweeping, watering, removal a
men's wages, horses, keep of horses, carts, etc., et
I maintain therefore that though the paved road
cost, its reduced cost of maintenance, its smaller ex
its freedom from dust, and its capability of being w
dangerous microbes, is a better investment from t
view than a macadam road, and that motors by
forcibly to the dust problem have done us a real
Douglas Galton's day nearer, when washable, impe
rule and not the exception. Just a final word on t
of many water carts, practically all those at pres
water is delivered from a height of about two or th
or whirled in a spray over a distance of five or six
surface. The consequence is that the dust-layin
of dust as big as is done by a fast-running motor c
had to close the windows of my hansom when dri
the wake of a water cart to avoid being smothere
sible water cart will deliver its water not more than
and will not spray it out at the sides as many do
the fall of water from a height on to the setts wash
loose in many cases, one of the reasons why many
watering of paved streets.

Dr. Hall (Lancaster) said since he took to m
he had never missed an appointment and had ne
work better. He had suffered from bronchitis a
found considerable relief by motoring. He consi
greater than the keep of a horse.

Mr. W. French, M.A., F.I.C. (Principal of the
by the President if he had anything to say on t
question, said he believed the idea of the layin
solutions was more or less of a myth. To his mi
so much the laying of dust as the prevention of it
cars.

Dr. Settle offered the strongest opposition to motor-cars and motoring. He did not know how the distinction of "road hog" came to be conferred upon the motor-car, but he thought it distinctly appropriate, and the awful grunt they gave when they swooped down upon one showed that the word was not misapplied. They covered people with dust and poisoned them with fumes. He had often thanked heaven that he was born in an age of bicycles, but he had never thanked heaven for the coming of the motor car. By all means let them have balloons and aerial navigation, but let them draw the line at these infernal dust-raising and death-dealing engines.

Dr. Martin (Gorton) pointed out the advantage to the public which the cycle and motor had produced, because their competition with the railway companies had induced the latter to offer cheap fares and greater facilities for people to travel about. They would see a similar advantage in agricultural traffic. Whereas in times past farmers had suffered from preferential rates given by railway companies to foreign goods, the effect of motor traction in agricultural districts would have an effect upon the rates charged by railway companies to farmers. The displacement of the breeding places of flies by the removal of manure heaps would be one of the beneficial indirect effects of the coming of the motor. Flies were a fruitful source of the dissemination of typhoid fever and diarrhœa. If we could bring about a lower death-rate by doing away with many sources of disease and infection, we need not much fear the lowering of the birth-rate of the country. He had looked up the statistics, and found that the accidents from horse conveyances were far more numerous than those from motors. He was prejudiced in favour of motors, and he could see a great advantage to public health if motors became more and more prevalent all over the country.

The **President** said that with the displacement of the horse would come the improvement of roads, and this after all was the basis of the whole thing; it must be recognized that a railroad was only an improved form of road. The dangers of motoring were two-fold: to life and to health. To life, due to excessive speed or to want of sobriety; to health, due to fumes and dust which affect the respiratory system, and to noise and anxiety which affect the nervous system. Excessive speed was largely a question of regulations, sobriety, and self-control. The objectionable fumes would soon be a thing of the past, for fuel would be so altered or adapted that they would be got rid of. The dust question was a more serious matter. Riddance of dust meant both improved roads and improved cars; the improvement of the material of roads rather than the laying of the dust after they had been made. If then we could get rid of the dust-making machine, that is the horse and cart, our greatest difficulty would be removed. The horse demanded a rough surface, and in destroying that rough surface made the dust which the motor car raised. The motor car required a smooth surface which could be made dustless. We must all recognize that motor cars have become a necessity of modern life, and that those who have become accustomed to use them are not at all likely to give them up; so the result will be cumulative. To those who would wish to stop the progress of motors he would say, be wise in time, and "Learn of thy necessity to reason thus, there is no virtue like necessity."

Dr. Herbert Jones, in replying, said that whether we had the motor car or not, we had the dust, and the organic matter it contained was intolerable. No one would argue that we should keep the dust as it was at present. Motoring was making the roads so bad that road engineers

were being compelled to make the roads bette
infantile mortality was due to dust. Milk was oft
dust getting into it, and the dust caused the d
contained organic matter. Much cruelty would
the advent of the motor, and the moral sense of pe
Busy Medical Officers of Health in rural districts
three days' work in one, and that would be an adv
the action of the Medical Officer of Health who sai
standing in front of all motor cars, waving a red
reduced to seven miles an hour; then they migl
established his right to the King's highway.

THE AUTOMOBILE AND TUBERCULOSIS.—A
Blanchet, advises the use of the automobile by co
that the rapid movement in the open air reduces
and improves the appetite. It causes refreshing
as a sedative to the nervous system, and the incre
ing to the same effect. The dangers of the auto
should be avoided, chilling the cutaneous surfa
exercise by excessive speed. Great speed induces
the patient.

TUBERCULOSIS OF FOWLS.—A. Weber and H. Bo
K. Gesundheitsamte, 1904, *No.* 1.—*Exp. Sta. Rec.*—
was made for the purpose of gaining additional inf
identity or non-identity of mammalian and avian
lation experiments were made with fowls, rabbits,
by the feeding, intravenous, hypodermic, and in
results of the authors' investigations may be sumn
avian tubercle bacillus, as a rule, shows morpholog
ters, which distinguish it clearly from the mam
Occasionally, however, the organisms appear to
respects. It appears that under natural condition
in fowls takes place through the alimentary trac
bacillus is pathogenic to some extent for rabbits, mi
guinea pigs, however, the progress of the disease
tubercle bacilli obtained from fowls retain their ori
ties unchanged, after passage through the body
authors' experiments these organisms could be
being cultivated in guinea pigs and mice for a peri
A typical culture of mammalian tubercle bacilli
organs of a parrot affected with tuberculosis. The
in obtaining a typical culture of avian tubercle b
mesenteric glands of a pig, which otherwise showed
culosis. Under natural conditions, therefore, the
find any tendency of the mammalian tubercle bac
into the avian form in the body of fowls, or of the a
modified into the mammalian form in the body of m
was found from their own experiments, or from the
that fowls suffer from tuberculosis of the ovaries,
cluded that infection is not transmitted by means
in the fæces.

SOME CRITICISMS.*

By F. GRAHAM CROOKSHANK, M.D., Lond.
Medical Officer of Health for Barnes Urban District.

Until a few years ago, there stood, in the North of London, an ancient and barn-like structure in which Liston, Erichsen, and Thompson had operated, and Jenner, Quain, and Reynolds taught.

Its chief interest to myself will always be that I had there the privilege of sitting at the feet of that most brilliant and versatile physician, the late Dr. Vivian Poore, who will, a generation or two hence, be recognized as one of the most sagacious of sanatarians.

But this barn-like structure has disappeared, and, surrounded by a wilderness of chimney-pots, there stands, in its place, a palace of red brick and terra-cotta, with turrets, pinnacles, and flying bridges, with marble halls and crystal corridors, to use the cant of specification, "all embellished with enrichments of approved design."

Here one sees gynæcologists dip their elbows in silver bowls that might have adorned Solomon's temple; here students imbibe instruction perched on marble slabs like oysters at the fishmonger's; here surgeons turn taps on with their feet, and here, on metal trolleys, patients whizz to and fro the theatre like chops on a hot-water dish.

With infinite pains the scientist and the artisan, supplied by the latter day philanthropist, have unconsciously mimicked the metal implements, the mosaics, and the marbles of Athens and Pompeii, and, with equal sedulousness, have excluded from the aid of London's poor what the peoples of Athens and Pompeii, our masters in asepsis, knew so well how to employ—the beneficent agencies of fresh air and sunshine.

It is all very wonderful; but is it really right to spend half-a-million of money that, in Smithfield and Gower Street, successes be obtained, which, by the observation of a few simple rules, Alanson commanded at Liverpool one hundred and twenty-five years ago in a measure that in our time has been never surpassed and seldom equalled?

It is no doubt an admirable thing to see a gynæcologist lave his elbows in an inverted dish-cover that has cost fifty guineas. But might it not be better sometimes, for fifty pence, to take the patient to where there are fewer microbes, and perhaps fewer gynæcologists?

After visiting one or more of these marvels of plate-glass, opalite, and enamel, that in envious emulation of each other are so rapidly dotting the Metropolis, it seems no doubt a paltry and trivial thing to have to persuade a district council that drains often mean disease, that cess-pools are a calamity, and that a house solidly built as the walls of Babylon may yet be unfit for habitation if its inmates have neither light nor air. And then to be told that one is really a little out of date; that sewer-gas is rather a beneficent afflatus; that typhoid is always due to oysters or watercress and has nothing to do with drains; and that, so far from tuberculosis having anything to do with wet soil, overcrowding, dirt, and foul air, it is really a matter best dealt with by little placards in the tramcars that he who rides and chews may read and yet not spit! I shall feel no surprise to hear one day that the sale of ipecacuanha ought to be prohibited. I am sure that to make the exhibition of ammonia and senega an offence, punishable by a fine not exceeding forty shillings, would be a legislative achievement welcomed by all moderate men.

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* Paper read Friday, May 19th, 1905, at the Home Counties Branch of the Society of Medical Officers of Health.

May it not be that we, in our anxiety to be progressive, are losing something of our sense of proportion, and in more matters than even hospital construction? Do we not seem, to the public, a little like an association of fat boys eager to make their flesh creep?

In one decade we badger the public into acceptance of a sanitary gospel. In the next we declare our views of yesterday obsolete, and irritate our lay friends by abusing them for adhering to what we no longer call the true faith.

Dr. Newsholme, in his admirable essay on Diphtheria, has quoted from Sir Edward Fry a dictum which should be inscribed in letters of gold around every arena of medical discussion.

It is this:—"There is no physical or logical distinction between principal and minor causes, or between causes and conditions, in the case of two or more constituent parts of a cause, each of which is necessary, and none of which is by itself sufficient."

Accepting to the full the just conclusions of the bacteriologist, how false in logic and in science it yet is to state baldly, as is stated by one of our most eminent pathologists in one of our most classical compendiums, that "Tuberculosis is a disease caused by the *Bacillus tuberculosis*."

Just that, and nothing more.

How arrogantly superior persons now call pulmonary phthisis "Chronic pulmonary tuberculosis." Yet we know that pulmonary phthisis is not only a tuberculosis but a septic necrosis as well.

Even the subsidiary doctrine that phthisis is propagated by spitting, unless which one believes one is certainly condemned, may not rest on so assured a basis as is generally assumed.

For in fact it rests on the thesis that the *Bacillus tuberculosis* is an obligatory parasite, having no capacity for reproduction outside the body of its necessary host. Yet this thesis is a negative one, and so, incapable of proof, although generally thought not to be controverted by the fact that the bacillus can be cultivated on agar-agar in a test-tube. It is odd, too, that in this country, where the identity, in spite of morphological and other differences, of the organisms found in human and bovine tuberculosis has been so strenuously maintained, so little attention should have been paid to the remarkable observations at Davos of degenerative forms of the true bacillus, and that there should be so little knowledge of the smegma bacilli and the similar organisms found on grasses.

However this may be, there is surely real danger lest the enthusiasm with which the anti-spitting crusade has been inaugurated divert attention from root matters of sanitation, and that we trust to leagues and leaflets to abolish diseases which have their origins in racial proclivities and national circumstances.

At one time the innate proneness of medical men to assign undue importance to one amongst several causes or conditions no doubt led to overweening confidence in the works of the civil engineer.

But at present it seems to provoke the tacit adoption of the doctrine that preventive measures, in respect of certain diseases, should be directed not against the conditions under which the diseases attain periodic intensity and extension, but against the particular organisms, existent or hypothetical, which we believe to convey the disease from one person to another.

And further, our efforts have to be directed less against the natural stock of these organisms, than against those which we may suppose to exist in the persons, excreta, and vestments of those actually suffering from the disease.

How absurd it would seem to attempt the suppression of actinomycosis by the isolation of persons and animals infected, so long as the natural source of the fungus remains undiminished!

How futile it would be to isolate malarious patients lest mosquitoes should have fresh opportunities of renewing their supplies of hæmamœbæ! How much more effective it is to destroy the mosquitoes themselves, and how much more easy it may one day be to destroy the very source of the organisms which infest men and mosquitoes alike.

It is a little difficult to elicit plainly *why* we suppose certain organisms, of which some, as for instance those connected with measles, are hardly known, to have no existence which is not parasitic to one set of hosts.

It is still more difficult to ascertain why the possibility that certain diseases such as hydrophobia may not be due to the transference of organized ferments is not seriously considered.

It may be asked why, if certain "preventable" diseases are due to organisms that are not obligatory parasites, is it fashionable to sneer at those who maintain an ætiological connection between drains and diphtheria, or scarlet fever and sanitation ?

In respect of typhoid fever some latitudinarianism does, it is true, appear to be allowed. But even so it is not easy to suggest that what clinically is typhoid fever may be connected with "drains," or to hint that the oyster does not always play a rôle comparable to that of the mosquito, without having to meet opposition alike from those who settle the question by calling one a "de novo" faddist, and from those who declare clinical features to no more warrant a diagnosis in the case of typhoid than in the case of diphtheria.

In fact, whenever I have under my care a well marked case of typhoid, and can exclude the probability of infection by personal or dietetic agencies, I think of the schoolboy who said Shakespeare was not written by Bacon, but by another person of the same name.

For I am told my diagnosis cannot be supported if the organisms present may vary in minute differences from those alone, in text books, arbitrarily deemed worthy of the status "*Bacillus typhosus.*" Yet, if those who uphold the thesis that certain specific diseases are caused only by certain specific organisms, discovered or conjectural, and transmitted directly or indirectly from precedent cases of the same disease, are forced to maintain their position by denying the specific name to cases of disease clinically identical with those in which the chosen germ may be found, and yet differing in the vital minutiæ of the organisms actually present:—why then they have surrendered the substance and juggled with words to retain the shadow.

For if, as a result of sanitary defects which may serve to modify the life history of colon bacilli or simple saprophytes, diseases do arise which are clinically indistinguishable from those the bacteriologist holds orthodox, it is surely more important to tackle the insanitary surroundings of the beggar, passed by the laboratory Pharisee, than it is to make clean the outside of the cup and platter with phenol or much formalin.

It is possible that the bacteriologists have somewhat unduly neglected the study of what the botanists call symbiosis.

Certainly typical typhoid, like typical phthisis, and possibly typical diphtheria, is not a simple, but a mixed "infection." And it is in this fact that there is, I believe, to be found the explanation of the admitted failure to produce in the laboratory the diseases associated with the names of certain organisms.

It ought not to be forgotten that there are only three diseases in respect of which the four postulates of Koch and the fifth of Sidney

Martin are said to have been satisfied. And these three are anthrax, tetanus, and diphtheria.

Like the Scots Calvinist who said that of the elect there was "jist hersel' and John, and whiles she was no that sure of John," of even diphtheria I confess to doubts.

I know that the worst attack of ocular, palatal, respiratory, and crural paralysis that I have known occurred in a lady who, never in association with children or cats, when a pond near to her house was drained, suffered from a membranous tonsillitis in which the Klebs-Löffler bacillus had no part, and the *Bacillus subtilis* was present in overwhelming force.

In connection with this question there is a clinical point to which I would like to allude.

The advantages of administering internal antiseptics in infectious disease are not to be forgotten because of arguments based on the inaccessibility or refractoriness of the so-called specific organisms.

On the contrary, they have their justification in the good they do by destroying saprophytic organisms, and so reducing mixed infections to simple ones. There is reason, I think, to believe that in typhoid the result depends as much on the secondary infections, or on the original state, bacteriologically speaking, of the bowel, as on the virulence of the "specific" organism. Old practitioners declare that the frequency with which empyemata, perityphlitic abscesses, and suchlike conditions now occur, is due to the neglect into which the old rule of giving a mercurial pill or powder at the beginning of acute disease has fallen.

The Japanese ascribe the remarkable immunity of their army from disease, and the remarkable recoveries made from wounds and operations, to the fact that every officer and soldier takes creosote pills daily as a routine habit, and so keeps his primæ viæ as free as possible from saprophytic organisms.

It is necessary, as a corollary of some of the doctrines currently held, that disease should be immutable, and that though two or more diseases may co-exist, hybrids cannot occur, and infection must always "breed true."

No doubt in times of epidemic this is so, more or less, but we must all admit that sporadic cases and groups of cases do occur which are terribly hard nuts to crack.

There are two ways of meeting the difficulty. One is to admit that our information is incomplete, and our conclusions possibly erroneous; and the other is to do as the Scots minister did when he met with a hard text—look it boldly in the face and pass on.

I rather prefer the former course.

One old-fashioned notion in particular, discarded now-a-days, not because it has been contradicted by observation, but because it opposes latter-day theories of laboratory origin, is that erysipelas has some natural affinity to scarlet fever.

I have lately had under my care a series of cases which I think confirm this notion.

Briefly the evidence appears, I think, to show :—

1. That local cutaneous erysipelas affecting one member of a household, may be followed by scarlet fever amongst the other members, the person having had erysipelas alone escaping.
2. Erysipelas of the face and head, with angina, may be similarly followed by scarlet fever amongst contacts.
3. Nurses who have not had scarlet fever may, on nursing cases of that disease, contract erysipelas and become refractory to scarlet fever.

Whatever the explanation of these facts may be, they do, I think, tend to elucidate the possible causation of some apparently sporadic cases of scarlet fever.

At present we cannot explain the occurrence of such cases, and our difficulties are only increased by insisting that the virus of scarlet fever is a specific and invariably obligatory parasite.

Yet is only by insisting on this view that we can, in theory, justify our attempt to protect *communities* by isolating cases of scarlet fever. Of course we are, and always shall be, right in protecting individuals by the removal to hospital of cases of this disease. But, if in a few years time we know the cause of scarlet fever as certainly as we now know the cause of ague, we shall protect communities, not by isolating individuals, but by attacking the source of the disease.

I am quite prepared for a little ridicule in connoting diphtheria with smells and effluvia, but apart from the fact, striking enough to myself, that I have had true membranous inflammation of the tonsils set in only a few hours after vomiting induced by sewer gas, an experience of a few years ago gives me courage to maintain that diphtheria is not always due to infection from precedent cases in men or animals, but is sometimes a consequence of physical conditions.

Several years ago cases of diphtheria occurred every term amongst the pupils of a large boarding-school.

Every care was taken, but cases continued to crop up. They became more frequent. Then there was an outbreak, twelve or twenty boys at one time being ill.

Most careful investigation was made ; every throat was swabbed ; all boys, and there were several, who, though not ill, harboured even suspicious germs, were isolated and sent home.

The outbreak flickered out ; no boy was taken back unless repeated examination showed his throat and nose to be free.

For a time no fresh cases occurred, but the proprietor of the school suffered loss, and the establishment changed hands.

In a few months another case occurred ; then two or three more, and several lads who were not ill were found to have the Klebs-Löffler bacilli in their throats.

One day it occurred to the new proprietor of the school, who as an assistant master had gained knowledge of the earlier cases, that, although the lads affected slept in different dormitories, yet the cases had one factor common to most of them.

It was this : the boys first ill sat during part of each day in a particular corner of one class-room—a large hall some 90 feet by 30 feet. The flooring of this class-room was taken up, and immediately underneath that of the part indicated was found the open mouth of a long-forgotten shallow well four or five feet in diameter, twenty feet or so in depth, loosely steyned with bricks, and half-full of clear odourless water.

The well was pumped dry and filled in, and, from that day to this, no case of sore throat has occurred.

Here, after confessed failure of the bacteriologist and the isolation hospital, was a signal triumph for old-fashioned, common-sense sanitation.

In every logical sense the well caused the diphtheria, although no doubt some of the cases were secondary and due to mediate transference of the infection.

But this is to me the most interesting part of the story.

The school was a large one, standing in acres of ground, and with its own dairy farm. It had practically no connection with the nearest village.

But whenever a case, or cases, occurred at the school, a case, or cases, appeared at the village. The school curve and the village curve were similar. Now, though the village still has a curve, the school has only a base line.

Obviously there was one factor common to both the school and the village—probably a movement of the subsoil water under certain climatic or seasonal conditions. When the well was found, the link between the boys and this common factor was found. There must be several such links between the villagers and the common factor, and with the advent of urban conditions it may be hoped that some will be eliminated.

But is it not worth while asking whether the Klebs-Löffler bacillus, either in the form in which we know it or in some other, may not exist, with or without degrees of virulence or adaptibility varying with soil conditions, in places such as this well and floor ?

Another point.

The district of which I am Medical Officer lie Thames. Parts of it are very little above, and level. Its boundary on the one part is the Tha roughly coincides with a crescentic line of low e point of the half basin thus formed is on the rive of the district. Several years ago a sewer was b twenty feet, just about this point, and in the water was found which gave much trouble, and weeks of pumping. As soon as this pumping w curious divagations of the subsoil water were ev

Wells which had been dry for years filled up, been full for years ran dry.

And we had a widespread outbreak of scarlet with a great increase in the amount of sickness and such like conditions.

Such occurrences as these I have related, hardly occur save in rural or semi-rural districts, parallel in the experience of those who dwell in t Metropolis, should, I think, give us pause when de between outbreaks of disease and conditions of t

If I am not being tedious I would like briefly t stances attending a case of typhoid fever, i appearances were typical.

The patient, a man of forty, lived with his w estate of some size adjoining an expanse of op not for months left his dwelling for more than a fe on any recent occasion, taken food or drink aw the food consumed by the patient and his wife and what did not so come was obtained from the no case of typhoid had occurred for months. recently to the cottage. The sanitation of the m the cottages save this one was modern; the d with the public sewer, and the water was de service mains. But the patient was the head the one wall of his cottage was a lean-to greenho of moat conducted the surplus liquid manure a walls, none of which boasted a damp course. T afforded nourishment to sundry plants and ran into an open cesspit about twenty feet from th this cesspit the contents of the earth closet at the daily. The water supply was represented by a as I have said, about twenty feet from the cesspi

Would not Murchison have called this a case of typhoid generated in filth?

We know of course that the spontaneous generation of organisms is, as far as a negative proposition can be, disproved. But which is the most probable explanation of this case: that the disease was contracted indirectly from some person or persons unknown, or that the particular organisms that brought it about had had an extra-corporeal nidus in the soil, and that the pump and cesspit were accessories before the fact?

Whether it may be supposed, as in the now celebrated Polynesian case, described I think by Dr. Christy, that the infecting organisms were in a long line of descent from some others once deposited in the soil by a person actually suffering from typhoid fever; or whether the case was one which a bacteriologist would describe as para-typhoid, the issues are the same.

For it can hardly be denied that, if the organisms associated with typhoid fever have the capacity for such a saprophytic existence as must have occurred in this case, it is difficult indeed to refuse to admit the possibility that they may have a primary source other than the fæces of an infected person, or that they may be but a phase of the development under certain conditions of saprophytes normally found in fæces, and perhaps taken in with food.

No doubt the great majority of cases of typhoid fever seen in towns, or at any rate that occur in groups, are due to infection more or less directly through the usual sources from precedent cases.

But it is unphilosophic in the extreme to forget the occurrence, both at the present day and in times past, of sporadic cases, in isolated houses and villages, that are not capable of receiving such explanation.

Possibly in this country investigators into epidemic disease have fallen of late too readily into neglect of the scientific use of the imagination. The countrymen of Darwin seem to have forgotten that he himself said, "Without speculation there is no good and original observation." The repeated statement, fallacious enough, that modern science has been built up by Baconian methods, seems to have made many forget that Francis Bacon really did not understand the inductive logic by which Galileo and Newton made their discoveries, and that hypothesis is a very necessary part of the early processes of induction.

As a matter of fact the methods of Francis Bacon are the very ones which have led, and are leading, to the piling up of vast masses of incoordinated observations, sterile of result. On the other hand the most perfect and scientific work of our times that has relation to medicine is the long continued work of Manson and his school, which is truly a wonderful exemplification of the results of observation instigated by hypothesis.

Creighton alone in this country has, so far as I know, attempted to study epidemic disease in this way, although in his researches, just as in Darwin's, observation and experiment as generally understood are necessarily replaced by what is really the examination of records, documentary or otherwise. For in fact the work of Darwin, and of those who have followed him, is not work done by what are now generally conceived to be scientific methods.

One of the best instances of the application of induction to the study of epidemic disease is afforded by Creighton's researches into plague, rendered as they are of topical importance by the now confessed failure of bacteriological teachings to control this disease. In Dr. Creighton's brilliant essay, in which he distinguishes between the conditions under which plague originates or originated, and those which lead to its spread from community to community, repeated reference is made to traditional and historical accounts of the death of rats before local outbreaks.

Now in no modern book of medicine that I know of, written before 1890 or 1895, will you find that the dying of rats is alluded to save as a matter unworthy of serious attention, and interesting only as evidence of the credulity of our forefathers.

For what reason? Simply because fifteen years ago the death of rats precedent to an outbreak of plague could not be reconciled with the notion then current as to the conditions under which plague was supposed to be conveyed from its supposed endemic site at the "roof of the world," where, I imagine, it was supposed to have existed since the creation. But now, no belief is more firmly held than that rats suffer and die from plague. This is because we have bacteriological evidence of the fact.

Yet the historical and traditional evidence is just as, and no more, worthy of credence than it was when Creighton first wrote and was scoffed at by superior persons.

Surely such a striking confirmation as this of the value of the critical method should lead us to a more careful consideration of the origins of plague and other diseases.

Yet the doctrines of special creation and immutability of species appear still, in the matter of disease, to be tenaciously held by those who are prepared, in respect of all other phenomena, to admit the validity of the generalization of evolution, far older though it be than the epoch of Spencer and Darwin.

It would seem that there are three lines of enquiry which should be followed in respect of infectious disease.

1. We have to study the conditions and circumstances under which disease passes from person to person.

2. We have to study the conditions and circumstances under which disease attains periodic and occasional intensity and extension.

3. We have to study the conditions and circumstances under which disease originates, or has originated.

In fact we have to embrace in our considerations not only individuals, but communities, and periods of time.

It has been recently said that small-pox spreads when "epidemic conditions" are present. Well; I suppose that is so; but the explanation hardly illuminates. We comfort ourselves with the belief that the periodic variations in virulence of some diseases has some relation to the appearance of groups of persons who are not immune. It may be so, but I should like Professor Karl Pearson's mathematical exposition of the facts. We cannot explain in this way why typhus has disappeared from England and why it persists in Ireland: why cerebro-spinal meningitis is becoming widespread; and why we cannot check the plague in Bombay. We know still less of how or why scarlet fever is no longer what it was, and why, although the case mortality is falling, the prevalence of diphtheria is becoming greater.

Yet I seem to remember a prophecy that the day would come when diphtheria in London and Paris would be as the appearance of a wolf or bear in the streets.

We know something of the way in which scarlet fever, diphtheria, typhoid, and variola spread from person to person. But we know very little of how or why, other than by direct or indirect transference, these diseases, and others, attain intensity and geographical extension.

We conceal our ignorance by denying what we do not understand, as when history and tradition tell us that the great plagues and visitations of the past were generally heralded by telluric and volcanic manifestations.

As medical students we laughed when told of the herbalists who advised the gathering of simples by the moonlight. Yet now the botanists tell us that the leaves of the foxglove and the nightshade are richer in active principles by night than by day.

An outstanding fact in medical history is, that while the explanations of our predecessors were often absurd, their observations were wonderfully accurate. At the present day we are apt to reject both the explanation and the observation, for the illogical reason that we know the explanation to be false. And perhaps herein lies our weakness in more than one sense.

A little more conservatism, a little less eagerness to hear some new thing, a little less readiness to trim our sails to every puff from a Teutonic laboratory, a little more recognition of the political, racial, geographical, and cosmic factors in disease, and we shall gain more influence in the State.

Then perhaps a benevolent despotism will enforce the dictates of experience linked with explanation, and we shall wonder why we ever thought to bring about, with handbills and talks at mothers' meetings, a sanitary millennium in a country which lavishes its resources that the lunatic may be kept in luxury and the criminal in comfort, that mulcts the provident to pay for the wastrel, that impoverishes the land to fill the slums, and that regards the liberty of fools as of more value than the well-being of the wise man.

Postcript, July, 1905.—Since these notes were written and read, a remarkable paper, by Prof. Leith, of Birmingham, has appeared (*British Med. Journal*, June 24th, 1905, page 1382). Prof. Leith states very truly that bacillary plasm is germ plasm, and hence liable to be greatly and comparatively quickly influenced by environment. He regards it as fairly proven that the various tubercle bacilli (mammalian, avian, piscine, etc.) are modifications of a general stock, some hardy saprophytic germ closely allied to the grass bacilli, etc., alluded to by me.

So much being admitted, it is difficult to say what of the current hard-and-fast notions will be in a few years retained. It is only a step further to admit the probable truth of Dr. Bastian's views on heterogenesis.

In my notes, I stated incidentally that the doctrine of spontaneous generation is, *so far as a negative proposition can be*, disproved.

I did not particularly care to point out in what a very limited degree, logically, spontaneous generation has been actually disproved. As a matter of fact, neither Pasteur nor Tyndall ever really established the doctrine that all life proceeds from life. They merely established that the contrary had not been proved.

I am not concerned with the actual value of Mr. Burke's experiments, but it is interesting to observe that no one, so far as I know, has cared to reassert belief in the impossibility of spontaneous generation. On the contrary, distinguished clerics have hastened to discount the possible effect of its proof.

I venture to think, then, that the plea for an open mind in matters biological has lately received considerable support. It is quite true, as Jevons said, that nothing turns a jury so much against a prisoner as the breakdown of an attempt to prove an alibi.

Still, no number of failures in attempting to prove a proposition really disprove it. Unfortunately, a vast number of current bacteriological notions have no better basis than an acquiescence in the fallacy just indicated. The pity of it is that so many deductions are made from premises no better than these notions.

DIPHTHERIA.*

By H. RENNEY, M.D., D.P.H.,
Medical Officer of Health, Sunderland.

When I received an invitation from our worthy Secretary to read a paper at this meeting of the Northern Branch, I felt some difficulty in choosing a subject. Just about that time, however, we were having what was, for Sunderland, a great increase in the number of notifications of diphtheria, and I thought I could not do better than introduce a discussion on that disease, and the measures which might be taken in order to prevent its spread. I approach my subject with considerable diffidence, for I feel that I have not much that is new to tell you, and I would much rather be listening to one of you than standing here as a reader of a paper. However, I hope to learn a good deal from the discussion of this important subject.

Diphtheria was, at one time, comparatively speaking, a rare disease in Sunderland, and I believe also in the county of Durham; but of late years it has been considerably on the increase. Not only in the County of Durham has this been so, but in the whole of England and Wales, for according to the Annual Reports of the Registrar-General, the mortality has been much increased during the last decade.

In Sunderland, the average number of notifications of diphtheria (in which are included membranous croup), has been 48·6 for the last ten years. During the whole of last year we had only 74 cases notified, but in the first quarter of this year we have had 55 notifications, so that it is time something was done to endeavour to limit the spread of the disease.

On investigating these 55 cases, I found that most of the children affected attended the Council Schools. Nine cases occurred in one class-room of the infants' department of one of the schools. On March 21st, the class-rooms and cloak-rooms of this department were disinfected by means of formalin spraying and formalin vapour. Since that date there has only been one case in the department, viz., on March 24th, and it had probably become infected before the disinfection was carried out.

I do not wish to assume that the source of infection was to be found only on the floor, walls, and desks of this class-room, but I think it is a very significant fact that since March 21st there has not been another case there. I had not an opportunity of taking swabs from the throats of the unaffected children, and I cannot therefore say if any of them acted as "carriers." I had intended taking swabs from the dust on the floor and from the top of the door previous to disinfection, but my disinfector had done his work before I was aware of it, and thus probably prevented me acquiring some interesting information. I took swabs from these places after the disinfection had been completed, and the result was negative. Of the nine children who were attacked, the first case occurred on February 17th, and the others in the following order, viz. March 4th, 9th, 13th, 14th, two on the 15th, 16th, and 24th. How the first case originated I am unable to say. I have not been able to discover any infected area in close proximity to the school. Slates were used for writing on, but there was no provision made whereby each child got its own slate every day. There had been no cases of diphtheria for a considerable time in this school previously.

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* Read at a Meeting of the Northern Branch of the Incorporated Society of Medical Officers of Health, May 12th, 1905.

In an epidemic of diphtheria which occurred in Bradford during the earlier part of 1903, according to information gleaned from a paper read by Dr. Crowley at the Glasgow Congress last year, swabs were taken from 93 throats where no clinical evidence of diphtheria existed, nor even sore throat. Out of the 93, there were diphtheria bacilli found in 42, that is, in a little over 45 per cent. If then, in every epidemic in schools, there are bacilli in anything like this proportion in healthy throats, or at all events in throats where no evidence of diphtheria exists, we have a very potent factor which makes for the spread of the disease; especially in the infants' departments, where children of susceptible age are crowded together under conditions which are by no means as sanitary as they might be. There is now no reason to doubt that Klebs-Löffler bacilli are found in healthy throats, and that these act as carriers of diphtheria to others, whose vitality, from one cause or another, is lessened. I believe that the use of pens, pencils, slates, and drinking-cups in common is a very frequent means of infection. The dust of class-rooms in the joints between the floor boards, on the top of doors, and in other out-of-the-way places, no doubt forms a nidus for bacilli.

Let me here relate what took place recently at our borough sanatorium for infectious diseases. On November 25th, 1904, a boy was admitted suffering from a typical attack of scarlet fever, the rash being well out on admission. He had, however, a very suspicious throat, and I at once injected 2000 units of anti-toxin, and had him removed to a pavilion by himself. Swabs from his throat were positive. He did exceedingly well, and a month later was returned to the scarlet fever pavilion, as he was still peeling. Previous to his re-admission this pavilion had been thoroughly disinfected with formalin. On January 22nd, 1905, a nurse who had been working in this pavilion, in the male ward, developed diphtheria. She was removed to the isolation block, and disinfection was again carried out. On January 31st, a boy, who had been admitted into the scarlet fever pavilion on December 22nd (after the pavilion had been disinfected owing to the other cases), developed diphtheria. He also was removed, and disinfection was again carried out. On February 6th, Klebs-Löffler bacilli were found in the healthy throat of a child in the same ward, but nothing came of this. On March 24th, yet another case of diphtheria appeared in another scarlet fever patient who had been admitted on March 9th. He was removed, and the pavilion was emptied of the rest of the patients. Swabs were then taken from the dust on the top of the door, and also from crevices in the floor. Diphtheria bacilli were found in both instances. Thorough disinfection with formalin was again resorted to, and swabs were taken as before. The result was negative. I have no doubt that a certain percentage of scarlet fever patients have Klebs-Löffler bacilli present in the throat on admission, and although the majority of these do not develop diphtheria, yet they act as carriers to others. I think it is a matter for serious consideration whether all scarlet fever patients should not first be admitted into an observation pavilion, where swabs could be taken, and the patient detained until the swabs showed a negative result; they could then be sent to the scarlet fever pavilion.

We know but little of the etiology of diphtheria. One bacteriologist has said that probably the bacillus is ubiquitous; if that be the case, there is no difficulty in understanding how it is that the disease occurs in so many different localities, and in different sections of the large towns. The curious thing about its distribution is, that it is found so frequently to be much more prevalent in the newer houses where sanitary defects do not exist, and this is not necessarily on "made" ground, or indeed, on any particular kind of soil, although a clay soil has been said to be more favourable to it. We need not consider the question of a milk-borne epidemic, or the occasional outbreaks which have been thought to be due to the disease in the cow itself, as when such outbreaks occur they can generally be traced to their source. As far back as 1877, Dr. Thorne, in his Milroy Lectures, gave it as his opinion that school influence operated in a number of ways, by bringing together children at the most susceptible age, and placing them in elementary schools, where, for long periods, they inhale the exhalations of their fellows. He thought that such aggregation induced a form of sore throat. One has only to attend the practice of a large throat hospital for some time to see what a large number of children have pharyngitis and tonsillitis, and these must form only a minor proportion of the total number who are suffering in a similar manner, so that there must be in every community a great number of children who are, more or less, susceptible to diphtheria.

The infection may be carried, as we know, in milk, by fomites, and some have thought, probably by domestic animals and even birds. Aerial convection I very much doubt, if by that is meant convection by winds. There is an aerial dissemination, however, that I think is possible. It has been proved that in coughing, sneezing, and, I believe, in speaking also, tubercle bacilli are projected from the mouth some few feet, and I do not see why the same thing should not take place when a person suffering from diphtheria coughs or sneezes. In this way it may be spread in schools, not only by the so-called "carriers," but by children suffering from an undetected mild attack. It has been thought that the bacillus may find a habitat in the surface soil, and that a rise in the ground water may, by expelling the ground air, lead also to the expulsion of the bacillus; but this is going back to the old theory that micro-organisms float in the air independently of any vehicle. It is not likely that the ground air will contain the little rafts of dust on which the bacilli could float. Besides, diphtheria has been known to have increased during dry years when there was no rise of ground water.

We shall never be able to successfully combat and destroy this disease until its etiology is fully worked out, but we can take action against it in a way which, I think, will materially lessen its incidence. I mean with regard to prohibiting children attending school at the most susceptible age period. Statistics show that the incidence and mortality increase up to the fourth year of life, and thereafter steadily decline. The Education Department certainly makes provision for children attending school from the age of three to five years, but does not *compel* them to attend until they reach the latter age. If then, we could prevent them attending school until this age were attained, I think there can be no doubt that there would be a very considerable reduction in the number of cases of diphtheria. I presented a report to my Health Committee recently, in which I pointed out the greater susceptibility at this age period, and I recommended that the Education Committee should be asked to endeavour to prevent children under the age of five years being admitted to school. I am glad to say that the Health Committee thereupon passed a unanimous resolution that my report be sent to the Education Committee, and that the Chairman and I should go as a deputation to further support their resolution*. On my suggestion, the Health Committee have also requested the Education Committee to take steps to prevent any child attending school for at least one month after having had diphtheria, a similar regulation to apply to children living in the same house with an infected case*.

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* Unanimous resolution passed by the Education Committee to ask the Education Department to prohibit children attending school under the age of five.

As further precautionary measures I would suggest the abolition of slates, and the substitution of paper for writing on. Children should be taught that it is dangerous to suck pencils, pens, etc., and the interchange of such articles should be forbidden. Drinking cups should be abolished, and the children forced to drink only from the running stream of water from the tap. Every Education Authority should have a specially appointed Medical Officer who would examine the children at regular intervals, and who would thus be in a position to detect the first signs of the disease; in addition to which he would take swabs from such throats as he thought necessary and have them examined. There is no doubt there are, from time to time, children attending school who have a mild attack of diphtheria; these would be excluded by such inspection, and isolated either in an infectious diseases hospital or at home.

If, in addition to these precautions, every child suffering from diphtheria were refused admission to school until the throat were free from bacilli, outbreaks of the disease would be very much diminished.

DISCUSSION.

The paper was very fully discussed, and the discussion elicited the fact that during the past five or six years diphtheria had increased in frequency alarmingly in the County of Durham. The increase of new houses built on previously cultivated soil on unpaved sites, was suggested as one reason for the increase of this disease. School life, especially the younger lives, was the means of disseminating diphtheria markedly, and that the use of school furniture, such as slates, etc., was probably one of the chief agencies in the school at work in spreading diphtheria.

There was no proof that drinking water entered into the causation of diphtheria.

As means of prevention there was unanimity respecting the suggestions made in the paper.

The increased incidence during the colder months of the first and fourth quarters of the year compared with that in the warmer second and third quarters, was also remarked.

Professor Koch on Tsetse Fever.—The *Cologne Gazette* publishes a letter from Professor Koch, who went to German East Africa at the end of last year to examine the causes of tsetse fever, recurrent fever, and plague, on behalf of the German Government. In the letter, which is dated Iringa, Uhehe, April 26th, the Professor announces that he has succeeded in ascertaining the existence in the tsetse fly of trypanosoma, confirming the observations of British workers. His investigations show that this parasite undergoes special development in the tsetse fly.

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* This also was agreed to by the Education Committee.

THE INFLUENCE OF PRIVY-MIDDENS AND WATER-CLOSETS IN DIARRHŒA AND TYPHOID.*

By A. W. MARTIN, L.R.C.P., D.P.H.,
Medical Officer of Health, Gorton.

For many years sanitarians have directed attention to the evils of the privy-midden system, and condemned it as the most abominable of closet systems. The ground around and under the dwelling houses becomes soaked with liquid filth, and the atmosphere becomes contaminated with the ground air saturated with the sewage vapour. The ashpits are emptied into the back passages and streets, with the result that in dry weather some of it is carried as dust by the wind into the houses, and settles upon the food and drink. It is also carried into houses on boots and shoes, and deposited on the floor coverings. The children play about on the floor, and continually put their fingers into their mouths, on which may be some of the dirt brought in from the streets. When diphtheria or other infectious disease shows itself, the parents wonder how it has originated. During hot weather the stench which arises from the middens where the houses are packed closely together, is indescribable. With such a system, it is perfect truth to say that the people live on the top of, and eat, drink, and breathe their own excrement.

Dr. Sergeant, County Medical Officer of Health for Lancashire, in his report for 1903, states: "Privy-middens are now generally regarded by Local Authorities as a prolific source of disease, and it is satisfactory to observe that increasing energy has been directed by sanitary officials towards the removal of this nuisance, and the provision of a system more in accordance with modern requirements. Unpaved backyards and house surroundings are referred to as sodden with fæcal matter, and held responsible for many occurrences of endemic disease."

More and more each year the privy-midden has become associated with the annual epidemics of typhoid and diarrhœa in an increasing number of reports of Medical Officers of Health. Dr. Niven, in 1898, says, "A study of the manner in which typhoid repeats itself in the midden districts shows there is a strong tendency for it to persist from year to year, or perhaps with the intermission of a year. Nothing could well be clearer than this demonstration of the influence of privy-middens in causing the disease, and we may infer of others owning a like origin. There can be no doubt that the bacillus of typhoid fever persists especially in the neighbourhood of middens, grows near and on the surface rapidly under favourable conditions, and that in some way it causes the disease."

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* An address delivered before the North-Western Branch of the Incorporated Society of Medical Officers of Health, May 26, 1905.

During an attack of typhoid fever the germs of infection are given off in the evacuations, and find their way into the ashpits, and remain there a source of infection, as shown by the investigation undertaken by Prof. Delépine at the request of Dr. Crocker (Eccles). Under favourable conditions these germs may multiply exceedingly outside the body, and become a distinct danger to the inhabitants of privy-midden districts.

Dr. Robertson (Sheffield) made some valuable experiments whilst Medical Officer of Health for St. Helens, showing that typhoid germs when sown artificially into clean soil (uncontaminated with filth), in the course of the winter months, do not retain their vitality, but die out, starved; also that when similar sowings are made into earth soaked with animal filth, the germs can live through the winter, and are able the next year, when the earth temperature rises high enough, to multiply and replenish the earth with death-dealing microbes, so that probably an area once infected remains infected from year to year, as long as the soil is kept soaked with filth, and especially the filth of human excrement.

In the subjoined table are given typhoid notifications and deaths from diarrhœa for the past four years in the Gorton district, occurring in houses with privy-middens, and with water-closets.

	Population.	No. of Privies.	No. of Water Closets.	Typhoid Notifications.				Diarrhœa Deaths.			
				No. of Cases in		Rate per 1,000		In Privy Houses.	In Water Closet Houses.	Rate per 1,000	
				Privy Houses.	Water Closet Houses.	Privy Houses.	Water Closet Houses			Privy Houses.	Water Closet Houses.
1901	27,000	4,050	1,350	84	5	19·5	3·7	86	3	21·2	2·2
1902	27,500	4,000	1,800	29	4	7·2	2·2	26	6	6·5	3·3
1903	28,500	4,000	2,200	31	5	7·7	2·2	44	4	11·0	1·8
1904	30,000	3,900	2,500	23	4	5·8	1·6	34	9	8·7	3·6

AVERAGE OF 4 YEARS.

		Rate per 1,000	
		Privy Houses.	Water Closet Houses.
Typhoid Cases	185	10·0	2·4
Diarrhœa Deaths	212	11·8	2·7

The difference in favour of water-closets is even very much greater than indicated by the figures, due to the fact that many of the water-closet houses are back to back and surrounded by privy-midden houses, and some hundreds of the water-closet houses are very close to night-soil tips. Of the diarrhœa deaths, 91 per cent occurred in the months of June to October, and the remainder in May and November, and a few in December.

With typhoid notifications I have taken the figures for the Manchester area for 13 years, 1891 to 1903. For the first quarter of the year there were 1413, second quarter 1087, third quarter 1724, fourth quarter 2260. Taking the figures for half-year periods they are, January to June 2500 cases, and July to December 3984. The percentage is 38·5 for the first half of the year, and 61·5 for the second half of the year.

The figures relating to diarrhœa give every indication that there is a cause operating during the warm months of the years, and which is absent during the colder parts. Since 1898 I have endeavoured to show year by year, in my annual reports, the connection between this disease and the domestic fly. A hot, dry summer produces an abundance of flies, and diarrhœa makes its appearance in about a week after the flies appear in large numbers. The diarrhœa sickness fluctuates and keeps pace with the temperature of the atmosphere, which is much influenced by the rain-fall, also the number of flies keep pace with the temperature of the atmosphere and the rain-fall. It is rare for the epidemic to begin before July; if it does, there will be found to have been several weeks of very hot weather in the early part of June, accompanied by large numbers of flies. Also it is rare for it to continue beyond October 15, and if so, it will be noticed that the warm weather continued into the autumn longer than usual.

The atmospheric changes are but secondary causes in the production of the disease, namely, as influencing the appearance and disappearance of the common house-fly, and also as affecting their numbers. The principal factors in the production of the disease are two, namely, privy-middens and flies, the latter conveying the germs from the privy-middens on to food, which is almost exclusively cows' milk.

During the summer a privy-midden was examined at the house of a typhoid case; the flies were hanging in bunches and wading in and sucking up the liquid excreta, flying directly into the kitchen, into milk vessels, and on to food exposed on the table.

The earth temperature of 56° four feet below the surface —upon which so much stress was laid years ago—has no connection with, or any bearing upon, the annual epidemic of diarrhœa; that temperature may be reached and sustained, or exceeded, for weeks together, and no epidemic of diarrhœa appears, if the atmospheric temperature is low for the months of July, August, and September, or if there be much rain during the period—limiting the number of flies. A very great difference is observed in the number of flies in those rows of houses supplied with water-closets and dry ashbins, as compared with privy-midden houses.

The infantile mortality is greatly influenced by the annual epidemic of diarrhœa, and there is little chance of permanently lowering that mortality in a privy-midden district until they are abolished and water-closets substituted.

The figures relating to typhoid are not so definite and conclusive as with diarrhœa, but they are sufficiently striking to indicate that there is an additional cause in force during the warm months of the year.

In the case of diarrhœa, observation since 1898 shows that diarrhœa makes its appearance in a week or ten days after flies appear in large numbers, but in the case of typhoid, three or four weeks elapse before an increase of notification certificates is observed; and the same thing happens at the end of summer. Diarrhœa deaths lessen from ten days to a fortnight after the flies disappear in October or early in November, but the typhoid notifications do not abate for nearly a month after that, and gradually lessen into December. The Manchester figures give 61 per cent of the cases from July to December, and the county of Lancaster 70 per cent of the cases from June to December for 1093 out of 1434 notifications.

Dr. Howard Tooth, in an address before the Clinical Society of London on March 8, 1901, on "The recent epidemic of Typhoid Fever in South Africa, and agencies concerned in the dissemination of the disease," states:—

"As may be expected, the conditions of these large camps were particularly favourable to the growth and multiplication of flies, which soon became terrible pests. I was told by a resident at Bloemfontein that these insects were by no means a serious plague in ordinary times, but that they came with the army. It would be more correct to say that the normal number of flies was increased owing to the large quantities of refuse, dead horses, etc., upon which they could feed and multiply. They naturally infest persons who are ill, but seem to be peculiarly attracted to enteric patients, hanging in loathsome groups around their mouths and feeding vessels. They were all over our food, and the roofs of our tents were at times black with them.

"It is a well-known fact that with the appearance of the frost, enteric fever rapidly disappears. The winter in South Africa is very mild compared with what we are accustomed to in England. It is true that the nights are cold, sometimes to many degrees of frost, but the days are warm and bright; for instance, in my tent at mid-day the temperature was rarely below 70° F., and sometimes as high as 80°. It seems hardly credible that the almost sudden cessation of an epidemic can be due to the effect of cold upon the enteric bacilli only. But there can be no doubt in the mind of anybody who has been living on the open veldt, as we have for three or four months, that the flies are extremely sensitive to the change of temperature, and that the cold nights kill them off rapidly. On consideration of these points it is surely justifiable to assign an important share to flies in the spreading of infection."

In an article on the same subject by A. B. Dunne, M.B., B.C. (late Civil Surgeon, South African Field Force), he states:—

"Nothing was more noticeable than the fall in the admissions from enteric fever, coincident with the killing off of the flies on the advent of the cold nights in May and June."

At a meeting of the British Medical Association, held in Manchester, 1902, a paper was read on the investigations of Major R. H. Firth, and Major W. H. Horrocks, Army Medical School, Netley, on "An inquiry into the influence of soil, fabrics, and flies, in the dissemination of enteric infection":—

"Experiment 36 was directed to determine, if possible, on what parts of the fly's body the enteric infective matter attached itself. Preceding results had established the belief that the 'blows,' or excretal deposits, were free from enteric bacilli. A certain number of flies (all common house flies) which had been in contact with the exposed infective material were caught and killed. By means of sterile forceps their heads, wings, legs, and bodies were separated and respectively placed in sterile broth. From the resulting broth growths, litmus glucose agar plates were set. From each series of plates the enteric bacillus was recovered.

"Ordinary house-flies (musca domestica) can convey enteric infective matter from specific excreta or other polluted material, to objects on which they may walk, rest, or feed. That such infective matter appears to be attached not only to their heads, but also to their legs, wings, and bodies. It has not been proved that the enteric bacillus passes through the digestive tract of the fly."

That there are other causes in the dissemination of the typhoid germ in addition to the fly is evident from the fact that 30 to 40 per cent of the cases occur at a season of the year when the common house-fly is absent. Many such cases are traced to contaminated milk, infected water supply, shell-fish, and watercress. Lately it has been found that early broccoli imported from Italy have given rise to cases, due to forcing them for the English market with the contents of cess-pools. A similar state of things is carried on in many market gardens in Cheshire, as I have actual proofs. Midden refuse is put on to the ground and growing vegetables, and the contents of privies are ladled into tubs, diluted with water, and the vegetables watered with such to force their growth, and then brought into the Manchester market.

I have endeavoured, very briefly, to show the close connection between the diseases, summer diarrhœa and typhoid fever, and the different methods of domestic sewage disposal, and that the balance of favour is altogether on the side of the water-carriage system; and further, that the infantile mortality is closely affected and influenced by the summer diarrhœa death-rate, and that it is much more important to combat every cause of an unnecessarily high death-rate than to deplore a lowering birth-rate.

DETERMINATION OF NITRITES IN WATERS.*

By W. P. MASON.

It may be worth while to call attention to the fact that the "nitrite" error, due to the presence of burning Bunsen lamps, is often much greater than is suspected. In the water laboratory here, the chemically pure distilled water is prepared by the use of a large copper retort, heated by a very broad Bunsen burner. Only one other lighted burner is constantly in the room, and that a small one. Distilled water, as delivered by the tin worm, was tested with the following results, duplicates being run in each instance. One Nessler tube was exposed to the room atmosphere, after addition of the nitrite reagents, and the other carefully protected therefrom. The results are stated as parts per million.

Conditions under which distilled water was collected.	Nitrites present in protected tube.	Nitrites present in unprotected tube.
Not allowed to come in contact with air of laboratory ...	None	0·0015
Slight contact with air. Tin condensing tube entering neck of receiving bottle	0·002	0·008
Water allowed to drop six inches through open air to receiving casserole	0·007	0·008

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* *Journal of the American Chemical Society*, xxvii., No. 5, May, 1905.

"CAMBRIDGE—THEN AND NOW."*

By BUSHELL ANNINGSON, M.A., M.D.,
Medical Officer of Health for Cambridge, University Lecturer in Medical Jurisprudence, Secretary State Medicine Syndicate, University of Cambridge; President of the Eastern Counties Branch of the Incorporated Society of Medical Officers of Health.

When the newly-constituted Eastern Counties Branch of the Society of Medical Officers of Health honoured me by electing me their first President, it became a matter of some anxiety to me to decide on what subject I could most fittingly address them. The geographical expression "Eastern Counties," extending nearly from the Thames to the Humber, and including in its area the vast tracts of Fen-land, which between the times when Hereward the Wake held against the Normans the Isle of the Willow, and the great drainage works which led to the extinction of ague, suggested a review of the sanitary conditions prevailing through the centuries; but little consideration was needful to convince me that the magnitude of the subject was too great for me. I have, therefore, felt constrained to limit myself to the more narrow area of the University and Town where we are meeting, and to discourse awhile on "Cambridge—Then and Now." One difficulty in my path is the difference of area occupied by the ancient place and the modern. There has been here, as elsewhere, expansion and displacement, and more displacement than elsewhere, by the intermingling of the colleges with the town; if Roman influence, which has been transitory all through the country, be left out of account, the ancient town may, as Prof. Maitland conceives it, be regarded as a larger village than others, but still a village, with its messuages and common lands. The history of its evolution from this state into one essentially urban—from a *vill* into a *civitas*—is not the present object, although the several stages of development have had a large influence upon the life history of the dwellers therein; the conditions of living in the far past, the middle period, and the present, might be expressed by a new set of degrees of comparison as bad, worse, better (or best).

In its early period Cambridge town or *vill* was one of the hundreds† of the county, with the same sort of fields and messuages as the others.

The place has had many varieties of the present name, but the affix "bridge" is indicative of its importance, and according to Clark, "in the early middle ages the great bridge at Cambridge was the only point at which the river Cam could be crossed by travellers from the Eastern Counties to the Midlands, and Stourbridge Fair made Cambridge a trading centre at that time of far greater importance than it is at present."

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* Presidential Address delivered 17th June, 1905.

† A hundred (Saxon) was so named because it expressed an area of ten titheings, and each titheing of ten households.

It had the name of Grantanbryge in A.D. 875, i.e. about King Alfred's time, and in Domesday Book, Grentebrige.

Two peculiar operating factors in the municipal life of Cambridge have been :—

1. The early intrusion into its boundary of the *studium*, and the development of the *studium* into the *universitas*, and the subsequent attempt on the part of the university to control the municipal life of the place.

2. The circumstance of its having always been a royal demesne, subject to the King only, and, to quote Atkinson, "no lower lord"; whereby, in the struggle for municipal freedom, which was in early times going on everywhere, they obtained every privilege they desired by charter without great difficulty.

Some historians assume that Cambridge University was founded by Sebert, King of Essex, in the year 664, that is about 200 years antecedent to the alleged foundation of Oxford by Alfred; but there is little to support this assumption.

Another main cause of the early and rapid rise of Cambridge into importance beyond that of the other villages, was its position at the head of a series of waterways connecting it with the ancient port of Lynn, and with the more western counties of Huntingdon, Bedford, etc.

The Recorder of Cambridge, in his speech of welcome to King James, March, 1614, says: "Touchinge the antiquitie and denomination, historians testifie it was builded before Christ's incarnation, with a castle, towers, and walls of defence by Duke Cantaber, the Sonne of the Kinge of Spayne, who was entertained in England by King Gurguntius; and the towne being situated and united with a bridge upon the river then called Canta, was denominated Cantabridge; and in tract of tyme the name of the river being altered to Granta, the towne likewise to Grantabridge; and after it was called Cam, and the towne Cambridge. . . . This river is current throughe the heart of the Shire, with navigation to the sea, and is the life of trafficke to this towne and countie; and no bridge is over the same but at Cambridge, and it is mantayned by fower score hides of land lyeing spavin in this Shire which are of your Majestie by pontage appropriate to this bridge only. . . ." *

Having regard to the Cam of now, it is scarcely conceivable it could ever have been of such importance to the prosperity of the town, but

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* Cooper's *Annals* 111, 71.

from an incident which occurred a very few
James, 1649, and recorded by Badeslade
the river must have been subject to tidal
citizens of Cambridge and Lynn would not
against the construction of Denver Sluice (
Ely), on the ground that such constructi
wave and ruin the commerce of both town

"The Tide putting up ſo far into all the
twice in every twenty-four Hours, they w
ſupply'd with water from Sea in the drieſ
Inland Navigation, which by means of ſo m
extenſive in England, ſo that Commerce
maintain'd up the River Nene to Well
River Ouſe they could ſail with forty Tu
at leaſt from Lenne at ordinary Neip-Tide
Commerce was held to Cambridge, Bedford,

The following is from a petition of the May
Council of the town of Lenne, in Norfolk,
sluice :—

"For it muſt be taken for granted, that th
up the River than the Sluices, . . .
pray that there be no sluices set upon the
navigation."

In the Petition of the Vice-Chancellor an
University of Cambridge, together with the
the town of Cambridge, sheweth, that wherel
of the great level of the Fens, bearing d
ordered . . . . . "that the navigation
and Ouse), as to the conveyance from C
Lenne, and from Lenne thither, will be the
away or very much obstructed in regard
which by its joining itself with the river o
maintain, the said navigation will be alt
diverted to another course. As likewise the
town of Cambridge and the town of St. Ive
others by the river of Ouse will be greatl
not only the said University and Town of C
undone, and all the adjacent countries gr
poverish'd, but also a great prejudice will
part of this whole nation, by the stoppage of
Sturbridge fair."

* Badeslade's *History of the Ancient and Pres*
of the Port of King's Lynn and of Cambridge (Lo

Denver Sluice was erected 1651, by the Corporation of Adventurers. Denver Sluice "was undermined first and afterwards blown up and destroyed by the Tides from Sea, Ano. 1713."

Whether the fears of the petitioners were justified or not, the single bridge and the water facilities did doubtless bring about the commercial importance of the place.

"I cannot omit," says Defoe, "that I came necessarily through Stourbridge Fair, which was then at its height . . . . . which is not only the greatest in the whole nation, but in the world; nor if I may believe those who have seen them all, is the fair at Leipzig in Saxony, the mart at Frankfort-on-the-Main, or the fairs at Nuremberg or Augsburg, anyway to compare to this fair at Stourbridge."

The commercial value and glory of the river Cam, and of Stourbridge Fair, have dwindled almost to extinction, and although we have still a Navigation Authority, and Stourbridge is still proclaimed by the mayor in state, yet they are both now mainly given over to amusement and sport, not by the way altogether without value, for the physical training and bodily discipline of rowing are certainly valuable, and even cocoa-nut shying may be a good training in accuracy of eye and deftness of hand. Four railways now connect Cambridge with other places, and have supplanted in object both the river and the fair.

Not merchants alone, it may be assumed, would resort to this great annual gathering, which was opened with much municipal pomp, but from the monasteries, which were so great and so numerous in this Fen-land, the masters of the novices would also come to lecture, and so gather round them bands of students; later the itinerant character of the teaching merges into some local and permanent system, with some directing head such as Rector; organization and specialization follow; and in the exact words of Mr. J. W. Clark, "the place gains reputation as a *studium*, and the little body of volunteers is saluted as *Universitas Vestra*." The evolution of the University and its Colleges as we now know them, is not however my present object.

Besides merchants and students, Stourbridge Fair was then an importer and distributor of Mediæval plagues, just as now, dwindled as it is, within my own experience it has brought to us small-pox, typhoid fever, and diphtheria. In Cooper's *Annals* are many references to the presence of plagues in Cambridge, sometimes for several successive years together, and one such is mentioned as being directly the result of the foregathering at Stourbridge Fair.

Another visitation of a plague, which was probably typhus (for the records give but little indication as to the real diagnosis of the prevailing sickness), occurred in 1521–2, and it is recorded that:—

"In thys year of the Assize kept at the Castle of Cambridge in Lent, the justices and all the gentlemen, bailiffs, and others resorting thereto, toke such an infection, and many died, and almost all that were present were sore sicke and narrowly escaped with their lives."

Also that "The old parish of All Saints, at the Castle, has had no separate existence since the 14th Century, when the Black Death carried off almost the whole of its population. The church fell into ruins. It appears to have been situated on the south side of Huntingdon Road, and to the west of Mount Pleasant, on a spot now a garden, surrounded by a high brick wall."

That is what happened to the parishes and churches. Here is what happened to the clergy:—

"The mortality among the clergy was immense. In the year of the great sickness (1349), the appointments to livings rose to 97, chiefly in the month of July. The recurrence of such visitations all through the middle ages was very frequent, but the records of the later visitations are the fullest."

And this is what happened to the doctors.*

"The plague again broke forth in Cambridge (1629). The university . . . was dissolved, and scholars dispersed into the country; three hundred and forty-seven of the townspeople died of the infection. But this corruption of the air proved the generation of many doctors, graduated in a clandestine way without keeping the Acts, to the great disgust of those who had fairly gotten their degrees with pains and expense. Yea, Dr. Collins being afterwards to admit an able man doctor, did (according to the pleasantness of his fancy), distinguish 'inter cathedram pestilentice et cathedram eminentice,' leaving it to his auditors to apprehend his meaning therein."†

Not a few times through the centuries Stourbridge fair and Midsummer fair have been prohibited by royal command; and it is recorded how frequently, on account of plague, the University had to suspend its scholastic work for lengthened periods, or migrate into the country. The university was thus almost entirely deserted, all Acts in university and college were suspended, and leave of absence granted to every one without loss of stipend or other privileges, so that, as one of our annalists (Gostlin) says "Nec Academiam in Academia nec Cantabrigiam in Cantabrigia videre licuit aut invenire." For the few whom duty or poverty forced to remain, special regulations were made as follows:

"That yf it please God that any in the College should be visited with the pest, that convenient nurses, physicke, and advice be provided for them. . . . That the cook and his family be received into the

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* Fuller's *History of the University of Cambridge*, 1629.
† Fuller, p. 314.

College to provide commons for those few, which should venture to stay; and that Miles and a Scholar be in the Butteryes. That all the Bedmakers, except two, be immediately turned out of the College, and be allowed two shillings apiece every weeke. That a man be hired for 5s. a week for attending continually at the gate to goe of errands into the town."

In the year 1575 Dr. Pern, Master of Peterhouse and Vice-Chancellor, together with Roger Stegge, Mayor, promulgated a set of rules for the sanitary government of the town, and for the isolation of infected persons, and for the destruction of infected goods. These are far too long for quotation, though I shall have occasion to refer to them later. One extract will suffice:—

"Also that no manner of person inhabiting within any house visited with plague or pestilence, after notice given by the Vice-Chancellor and Mayor, by these words in writing in great letters set upon the uppermost post of his street door, viz: 'LORD HAVE MERCY UPON US,' shall go abroad out of that house upon pain for the first default 20s., and for the second default herein, 40s., and for the third default perpetual banishment out of the town."

It is most interesting to note here that one of the most beautiful architectural features in Cambridge—Clare Bridge—is one of the several beneficial results of plague prevalence, as indicated by the petition of the Masters and Fellows of Clare Hall in the year 1673 to King Charles as follows:—

". . . . Your petitioners doe humblie begg of your most sacred Ma^{tie} y^{t} they may be suffered at their own chardge to land a bridge over ye river, and enjoy a passadge through ye said But-Close into ye feilds, w^{ch} would be little or noe prejudice to them, and of great benefitt to your petitioners, especially in tymes of infection, having noe passadge into ye feilds but through ye Chappell yard of your said Kings Colledge, ye gates whereof are shutt up in those tymes of danger."

Further wishing to obtain for the same purpose land belonging to King's College on the west bank of the river, they offered as a further inducement to King's, that they would set back their proposed new building, which was to be exactly opposite the building of King's Hall, some 70 ft., whereby their buildings would get more light and air, and "ye annoyance of ye windes gathering between ye Chappell and our College" would be removed.

"In the parish books are charges for pitch and tar to burn in the churches."*

From all the above, it would appear that segregation and disinfection of a sort were practised then as now, but not in the same measure of efficiency and success as in our days. Neither was the community altogether ignorant or careless of the value of cleanliness, fresh air, and pure food and water; but they had not a complete knowledge, nor the means of carrying into effect the little knowledge that they did possess. Sanitary knowledge and the ability to use it have come only within the Victorian era, and may be assumed to start with Chadwick's Health of Towns Commission. It is likely enough that the sanitary condition of Cambridge in very early times, when the monks of Ely had a grant of fishery here, was much better than it subsequently became; there were then no sewers to pollute the river; little slop-water to pollute the soil; and the inhabitants too few to pollute the air.

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* *Bowtell MS.*

The first incentive to pollute the river was the construction by Henry III. (1266) of a ditch first called the "King's Ditch," but subsequently the "Black Ditch"; it encircled that part of the ancient town not bounded by the river, and commencing above "Small Bridge," near what is now "Silver Street," and traversed Mill-lane, then past Pembroke College, across the old Botanic Garden (now the site of the New Museums), and Tibbs Row, to Christ's College, past Sidney Sussex College, down Sidney Street (then Conduit Street), to the Great Bridge opposite Magdalene College; it is supposed it was for a military fosse, for it would appear that on account of the troubles of the times the King intended to have built also a rampart along the line of the ditch, but time and opportunity failed him.

In the following year, 1267, probably at the time of his visit, the King granted Cambridge its second important Charter, and among its provisions is one to the following effect:—"That the town should be cleansed from dirt and filth, and kept clean; and that the watercourse should be opened and kept open as of old it was used, so that filth might run off. That all obstacles which prevented the passage should be removed, and that the great ditch of the town should be cleansed, for doing whereof two of the more lawful burgesses in every street, were to be sworn before the Mayor and Bailiffs (the Chancellor and Masters being asked to be present if they would)." A relic of this duty of the burgesses remained till quite recently in the obligation of each householder to clean snow from the pavement in front of his dwelling. The foul condition of the streets in King Henry's charter was in a large measure due to the practice of housing cattle, swine, and horses within the town of a night, and commoning them by day on the town pastures; for at this time the place was still an agricultural unit of the county, and had not yet become a "township." The right of depasturage of cattle and horses on the commons still persists.

In Cooper's *Annals*, volume 1, pages 133 and 134, we find the following:—

"The thirteenth chapter in old records frequently termed the Statute of Cambridge was in all probability suggested by the filthy state in which the town appears to have been about this period, when the King held his Parliament here in 1388."

It is recited in the Statute: "That so much dung and filth of the garbage . . . be cast and put in ditches, rivers, and other waters, etc. . . . that the air there is greatly corrupt and infect, and many maladies and other intolerable diseases do daily happen. . . . "

Excremental nuisances were not much better in and about the colleges. From *Lamb's Corpus Documents*, page 156, it would appear:

"That the seyde College (Trinitie) doth commonly use to laye their mucke and meanor on the back apon the forseyd common grene when they will suffer no man elles to do the like, and have builded a common Jakes upon the same."

From *Grace Book* B., we find the following item:—

"Pro mundacione bocardi ijs viijd." (2s. 8d.)

N.B.—Bocardi were the "places of Easment."

Excrement Disposal.—In Cooper's *Annals*, vol. 11, pages 332, 333, 334, it is recorded:—

"On the 30th Sept., 1575, a composition was made between the University and town for cleansing and lighting the streets, preventing the various nuisances, and diminishing the danger of pestilence. 'Forasmuch as the ordinance and provision made in the composition between the university and the town of Cambridge, for correction of common nuisances, taketh no good effect, and that divers evil disposed persons inhabiting within this town do suffer their cannels to lye uncleansed, and also lay their muck, mire, dung, and filth, in the high streets, under colledge walls, and other lanes, within the town, to the great noyance of all students, people of the town, and strangers. Also it is agreed by the said Mayor, bailiffs, and burgesses, that the void ground by Newnham Mills, the ground at the south end of Spital House, the fair yard, the hill in the end of Jesus Lane, the valley beyond the Castle Hill, and the Padding Pits, shall be the common dung hills and places, to lay the muck, mire, and filth, within the town as is aforesaid.'"

For the double purpose of cleansing the Black Ditch, otherwise King's Ditch, and bringing pure water to the town, it occurred to Dr. Pern, Master of Peterhouse and Dean of Ely, in 1574, to bring water in open conduit from the "Nine Wells," a chalk spring at Great Shelford, to Cambridge. No action, however, followed his suggestion till the idea was revived by the first master of Sidney Sussex College, in 1610, and carried into effect at the joint expense of the town and university, according to a scheme devised by Edward Wright, M.A., of Gonville and Caius College.

Before making a natural transition to the subject of water supply let us glance for a few moments on further developments of the sewage and excremental disposal. As the town grew in population, and built-on area, the difficulties increased, and more or less imperfect schemes were adopted in consequence of continued friction between the town and university on the question of drainage. An Act of Parliament was obtained, called the "Cambridge Improvement Act," for the better drainage etc. of the town, but notwithstanding the attitude assumed by the university on the question, many of the riparian colleges continued to have "dropping places," or large sewers of their own communicating direct with the river. The Commissioners created by the Act certainly redrained the town, but it turned out unsatisfactory, and there was no method of scavenging for household refuse even at the time of my own appointment here. We now have a complete new system of sewerage, a pumping station with rising main to convey the sewage on to land and contact-beds, a system of scavengering, a "destructor" for burning all the waste garbage produced; thus the river has been relieved of a function which it should never have had.

There is little to say about the water supply of bygone times; I have already adverted to the scheme of bringing water from the "Nine Wells;" it now goes by the name of Hobson's Stream and Conduit, and supplies the present fountain on the Market Hill.

The Grey Friars, now Sidney Sussex College, brought water from a gravel bed on high ground at Madingley; this water became intercepted by Trinity college, and the fountain in the Great Court is still supplied from that source. For the rest, the colleges and town depended on surface wells; and a glance at Loggan's views, and others of the ancient town, show pumps in college quadrangles, and in the public streets, mostly against the churchyard walls.

From *Cambridge Portfolio*, 318:—

"Henry VI. in his will directs that in the middle of the great quadrant of Kings College 'shall be a conduit goodly devised for the ease of the said college,' and for this purpose gave license to the Convent of Barnwell to grant a piece of land called 'Holwelle,' situate at Madingley, near the Grange belonging to the convent of Morrbans, for the subterranean aqueduct to be made thence to the college.

"There was also the King's Hall Conduit, from which Henry VI. had before 1450 granted to that college 'a voide place of ground' being near it.

"The conduit now standing in the great court of Trinity College in all probability occupies the place of one which had belonged to King's Hall. It was apparently built about the reign of James I."

So it would appear that this enterprising college, which had already absorbed Michael House, belonging to that society, and Physicke Hostel, belonging to Gonville Hall, got its water from the Grey Friars, and its fountain from King's Hall. Now King's College has erected in their new court a new fountain, but the water is from the same source as that for the vulgar use of all who choose to buy it; this vulgar water supply is one of the best things that exists now, and did not so then; it is nearly the same as the chalk water from the "Nine Wells," but the company mix with it a certain proportion of water from the greensand. Nearly every household is now supplied with this excellent water, which is delivered on the constant system and at high pressure. It is not, however, many years ago that a group of little streets near the conduit head derived their water from Hobson's Stream, but the ambitious little village of Great Shelford desired to become modern in the sanitary sense, and began to cast their slop water, etc., into a tributary of the Hobson's Stream.

But water now-a-days is used for more purposes than drinking; our wise ancestors however valued it too much to permit of its serving any other purpose, and on the 8th of May, 1571, the following edict was made, as quoted in Cooper's *Annals*, (vol. 2, p. 277):—"Dr. Whitgift, Vice-Chancellor, and the heads of colleges, for many and weighty reasons decreed, that if any schollars should go into any river, pool, or other water in the county of Cambridge, by day or by night to swim or wash, he should, if under the degree of Bachelor of Arts, for the first offence be sharply and severely whipped publicly in the common hall of the college in which he dwelt, in the presence of all the fellows, schollars, and others dwelling in the college, and on the next day should be again openly whipped in the Public School where he was or ought to be an auditor, before all the auditors, by one of the proctors or some other assigned by the Vice-Chancellor, and for the second offence every such delinquent should be expelled his college and the university for ever. But if he should be a Bachelor of Arts, then for the first offence he should be put in the stocks for a whole day in the common hall of his college, and should before he was liberated pay 10s. towards the commons of the college, and for the second offence should be expelled his college and the university; and if he should be a Master of Arts, etc., he should be severely punished at the judgment and discretion of the Master of his college, etc. Dr. Peacock characterizes this as a 'decree of savage and indecent severity.'"

Now we swim in our river and drink from its head waters.

My short sanitary back-look would be incomplete were I not to give a glance, and time indicates it must be but a glance and nothing more, at the relation of people to air-space. The ancient guild merchants did undesigned sanitary service by their active opposition in their commercial interest to overcrowding of the town.

" In the days of Elizabeth and her two next successors," says Maitland, " there was a scare at Cambridge, as elsewhere, about overcrowding."

"The poore persons dwelling in cottages and divided tenements are suffered to enjoye the bennifitt of the commons, and when the Magistrats have offered to keepe them off, by force they have putt on their cattell, and this liberty of commonage and tollerance of the Magistrate hath much increased of poore amongst us." Et. Seq.

And then a sort of Aliens Bill was devised to exclude them.

Then the University began to complain of the townsfolk assuming to themselves rights, which they asserted King John's Charter never intended :—

" Seeing this colour of being lords of the soyle encourageth them to build and pester every lane and corner of the towne with unholsome and base cottages, which receive none but ydle and poore distressed people, that live and pray upon the University."

On the other hand, the intrusion, as I have ventured to call it, of the University and Colleges into the town has led to large displacement of these same " unholsome and base cottages." Witness the expansions of King's and Trinity.

As a sequence of it all, there is now scarcely a town in England that has so much open space, private as well as public, as has Cambridge.

A few words in conclusion on the condition of life in this regard in the Colleges. Some misconception exists in the minds of many visitors to our Colleges with regard to the small cubic capacity of the sleeping apartments of the undergraduates in the more ancient parts of the Colleges. The late Prof. Willis, of Caius, worked out the real meaning of the present condition of things, and found by examination of the College records that several students occupied one large room, wherein they lived and slept, and had for seclusion as private studies small partitioned-off spaces, somewhat like cupboards, in the corners of the room, each having a window. These exist now, but in accord with the present practice of students not living in groups, these small spaces are made use of for the combined purpose of sleeping and dressing; therefore it is unfair to criticize these partitioned-off spaces as if they were originally designed as sleeping apartments.

Pressure of time has prevented me from making use of all the interesting historical material concerning the Town and University. I have, therefore, attempted a mere sketch, as concisely as possible, of the sanitary conditions of life here in the past and the present, and hope it has not been altogether uninteresting to you.

PREVENTION OF SMALL-POX.

A CONFERENCE on the prevention of epidemic small-pox was held on July 18th, at the Mansion-house, City of London, under the presidency of the Lord Mayor (Sir John Pound), and was attended by the mayors, provosts, and other representatives of municipalities throughout the country, as well as by a number of members of the medical profession.

Mrs. Garrett Anderson, M.D., announced letters of regret at inability to attend and of sympathy with the object of the conference from many local authorities, and stated that a memorial to the President of the Local Government Board, the Secretary for Scotland, and the Secretary for Ireland, setting forth the great importance attached by the memorialists to the prevention of epidemic small-pox by the systematic revaccination at school age of all but the children relieved under the exemption clause and of those who were for a time excused on the ground of ill-health, had been signed by the mayors of Chelmsford, Cardiff, Wallsend, Deptford, Wandsworth, Barnsley, Brighouse, Carlisle, Northampton, Newcastle-on-Tyne, Ilkeston, Burton-upon-Trent, West Ham, Jarrow, and Kensington, and by the chairmen of a number of district councils. The signatories represented districts where epidemic small-pox during the past 18 months had caused much suffering, destruction of property, increase of municipal expenditure, and interference with trade.

The **Lord Mayor of York** moved the first resolution:—"That the continued recurrence of epidemic small-pox involves much needless suffering, interference with trade, waste of public money, and increase of municipal expenditure." He said he was sure he would have the hearty sympathy of all present in moving that resolution. Those of them who had had an experience of an epidemic of small-pox could not possibly imagine anything much worse. He thought there was no doubt that they all agreed that it became necessary at a certain period to revaccinate. From a financial standpoint it was a good business speculation for the citizens of any community to undertake revaccination, for the expense of an outbreak of small-pox was very heavy. In York they had had the scourge. When he sat on the Bench and the conscientous objector came before him he had very little sympathy with him. After the conscientous objector had made out his case—and they knew he had very little difficulty in making out his case—he very often said, "Very well, take your certificate, and your responsibility with it." But, after all, the responsibility really rested with the community, and he would be very glad if at no very distant date, some amendment took place whereby only those who were incapable of receiving revaccination should be exempted from it.

Sir W. Broadbent seconded the resolution, which, he said, had rather the aspect of a declaration than of a resolution. The whole point of the resolution was in the word needless, and it was perfectly clear that all the loss, all the suffering which arose out of the occurrence of these epidemics of small-pox was needless. Experience—he said nothing of medical opinion, because everybody knew more about medical matters than the doctors—experience, statistics, every possible kind of evidence went to prove that if there were vaccination and revaccination at a given period practically the disease became unknown. What we needed was some effectual force to secure the carrying out of primary vaccination, and there ought to be secondary vaccination at the age of 13, by which the disease would practically be extinguished. What we wanted was a man like

Mr. Long, who extinguished hydrophobia by carrying out universal muzzling for a given time, notwithstanding the abuse to which he was subjected for this cruel violation of the liberty of the dog, who was not allowed to have his first bite even when he was mad.

The **Lord Provost** of **Glasgow** supported the resolution, and in doing so gave figures from the experience of Glasgow which suggested that in any population depending only on infantile vaccination a recurring susceptibility to infection began definitely to manifest itself in the period between ten and fifteen years of age, and that it reached an explosive intensity in the period between twenty-five and thirty-five years of age. The result of the present state of things was a violent fluctuation in the demand for small-pox beds. In the inter-epidemic years a small-pox hospital might be absolutely without a small-pox patient, yet the same population, when the epidemic cycle was complete, might find it necessary to provide accommodation for 400 or 500 at one time. That had been the experience of Glasgow. In 1886–7 there was no admission whatever, and, save in 1883 and again in 1892, the total admissions annually rarely exceeded 50, and were usually much below that number. The actual cost for additional hospital accommodation for small-pox in 1901 was £6,074 17s. 6d., making, together with the extra vaccination fees, a total of about £40,000, and the total hospital expenditure was increased from £42,000 in 1899–1900 to £69,000. Assuming the cost of vaccinating children of 12 to 13 years of age in Glasgow to be 1s. 6d. per head, this would amount to £1,125 annually, which was, roughly, about 1–30th of the sum paid in 1901 alone for revaccination. If by this means they reached Germany's position, the whole cost of special small-pox hospital provision, *plus* the added cost of emergency provision, would be saved, and the disturbance to trade, which must be considerable, avoided.

Dr. **Glover** gave some particulars as to Leicester, which they knew was a community very much opposed to this legislation. Dr. Millard, the Medical Officer of Health for Leicester, stated that there were 321 cases of small-pox in that town in 1904. "There was not one single instance of the disease attacking a person who had been recently vaccinated before exposure to infection." "The majority of the staff employed in 1903 were also employed in 1904, and, with the exception of three who had had small-pox before being engaged, had been recently vaccinated." After recounting the manner in which the staff were brought in contact with the patients, and adding that, during the two years, nearly 700 cases of small-pox passed through the hospital, Dr. Millard was able to report that not a single member of the staff contracted this most infectious disease. To the suggestion that this immunity might be explained by other means and not by vaccination, this important witness replied :—"As medical superintendent of the (Small-pox) Hospital and responsible for its management I ought to know what precautionary measures were taken, and I say emphatically that beyond vaccination no steps whatever were taken to protect the staff. I knew that with efficient and recent vaccination no other measures were necessary, and that without none would be of avail." It was remarkable that, in that defiant town, evidence was forthcoming from its own Medical Officer of Health, that the protection of Leicester depended, as the protection of Glasgow and York and London depended, entirely and solely upon vaccination.

Dr. J. **Niven** (Manchester) thought he ought to protest, as Dr. Millard was not present, against that use being made of his words. Dr. Millard, he thought, would not affirm that vaccination was the means of protecting Leicester against small-pox. In fact, he had, he thought, made it clear that in his opinion various measures of isolation and others taken in Leicester had availed largely to protect Leicester against small-pox. He utterly disagreed with Dr. Millard in his views, but he thought it was right that it should be understood that those were his views.

The resolution was carried unanimously.

Sir WILLIAM CHURCH moved :—" That epidemic small-pox ought to be prevented in this country, as it has been since 1875 in Germany, by the systematic revaccination of children in their 13th year." He said that the extreme value and success of vaccination misled Jenner and his immediate successors to say that vaccination conferred as great an immunity on the community as an attack of small-pox conferred. It was a mistake which could only be shown to be so by the passing of a number of years, but it was a very unfortunate thing, because, when after a certain number of years vaccination had been in use, they found people who said, " Oh, I was vaccinated, but I have had small-pox," and, therefore the uninstructed, and those who did not reason, at once jumped to the conclusion that the thing was a delusion, and that vaccination was no protection whatever. We now knew that the immunity conferred by vaccination wore out after from ten to twelve years. Since 1893 the mortality in Germany from small-pox had never exceeded one per million living, and in all except, he thought, one year since 1893, had been only a fractional part of one. Since 1874 revaccination had been made compulsory in Germany at school age, that was in the twelth year. Let them compare that with our own unfortunate position. He believed our own mortality per million living, taken over an average of recent years, was about 10 per million—ten times greater than it need be, as we knew from the German figures. He thought we might, with perfect confidence, prophesy that we should get rid of that most loathsome disease, small-pox, if we had vaccination and revaccination.

Alderman KILBURN (Dewsbury) seconded the resolution, which was carried unanimously.

The DUKE of NORTHUMBERLAND moved :—" That this meeting of Lord Mayors and Mayors, Lord Provosts and Provosts, and Chairmen of the urban or rural district councils of such towns and localities in Great Britain and Ireland as have suffered collectively from upward of 480 separate epidemics of small-pox within the last 18 months, ventures to urge upon His Majesty's Government the great importance of preventing the recurrence of such epidemics by the systematic revaccination at school age of all but the children relieved under the exemption clause, and of those who are for a time excused on the ground of health." He said he was more and more convinced the more he studied the question, first, that we must make further efforts in the direction of vaccinating our population generally if we were to cope with these constantly recurring epidemics ; and, secondly, that we could not hope to do anything of the kind without the support of the local authorities, large and small, throughout the length and breadth of the land. To a large extent it was, of course, a sanitary matter, but from other points of view it was really a fiscal question, for throughout this country we were going to a very great outlay to provide isolation hospitals, which he believed would be found to be absolutely useless and money thrown away. Perhaps he ought not to say absolutely useless ; they might come into use for other purposes, but to a very large extent they would be a superfluity if we could get our population thoroughly vaccinated and revaccinated. That had been the experience of other countries, notably of Germany, and he was sure it would be the experience here.

The **Mayor** of **Preston** seconded the resolutio
the **Mayor** of **Birkenhead**. and by
Mr. R. Brudenell Carter, F.R.C.S., who said t
of small-pox were not necessary, and they ou
occur. In Germany three or four years ago tw
admitted to a hospital in Berlin, and the med
into a state of excitement, for the students had
as a horrible pestilence suffered to exist in less
Two hundred and sixty students put their nam
those cases, and they were admitted in a success
of the students out of the 260 contracted small-
Italians who had never been vaccinated. In
not the same degree of compulsion as there was
very powerful protection exercised by public
France almost as well protected as Germany.
they had 262 cases in the year ended February 25
at one in 807. If London had had the same deg
have had 5,600 cases in the year instead of
exposed in the same degree it would have had
If Manchester had beeen exposed in the same
674 cases instead of 131. He thought they h
evidence that any amount of security afforded
sanitary precautions taken at Leicester was
requirements of the public.
Dr. Armstrong (Newcastle) also supported
carried unanimously, and a vote of thanks was
Lord Mayor, on the motion of Dr. **Edwards**, s
Anderson.

The Stewart Prize of the British Medical Asso
to William Henry Power, C.B., F.R.C.S., F.R.S

Assistant Medical Officer of Health f
In view of the increased work cast upon the hea
Riding County Council have decided to appo
Officer of Health, at a salary of £250 per annu
of £50, up to £400.

Motors and Hygiene.—The impurities aris
combustion of fuel are much less likely to cause
of physiological combustion, and in this respect
traffic by motor traffic is calculated to effect
The streets of London are ever full of dust, an
dust, derived so largely as it is from animal
decidedly sufficient to account for a number of
those who come into contact with it. Affectio
are very common in the pedestrians of busy str
termed the new pollution—that is, the pollution
this pathogenic factor of horse-drawn vehicles ?
perhaps, to give place to a fresh element, activ
depression, and languor. The new pollution of
hygienically speaking, than the old, but we may
not yet seen the ideal motor and that further i
the complete utilization or burning up of the vola

SCHOOL HYGIENE.

Exclusion of Young Children from School.—There can be no question that the attendance at school of children below the age of six (the period at which they are undoubtedly most susceptible to infection, is most harmful, and not infrequently disastrous. In previous reports I have drawn attention to this fact, and I still urge that an appeal should be made to the school governing authorities to raise the legal age of *compulsory* school attendance from five to six years, and, what is of still greater importance, prevent children from attending school while they are under the prescribed age. A step in the right direction has already been taken in the provinces, where the Board of Education are not insisting upon the provision of accommodation for children under the age of five, the present *compulsory* age.—A. Wellesley Harris, Ann. Rept., Lewisham.

School Buildings.—A Parliamentary paper [Cd. 2603] has been issued containing "The Building Regulations, being principles to be observed in planning and fitting up new buildings for public elementary schools, together with rules as to construction and certain requirements as to plans." In a prefatory note it is stated with regard to new buildings that the chief aim of the regulations is to secure that buildings newly erected for use as public elementary schools shall be satisfactory for their special purpose. Part I. relates to the designing of a school as a place of instruction, and to the principles on which a building should be arranged and fitted in order to secure conditions favourable to effective teaching. Part II. deals with the construction of the fabric, the sanitary and other hygienic conditions, and the safety of the scholars in case of fire or panic, and Part III. refers to the submission of plans in proper form for consideration by the Board of Education. Part I. is not meant to restrict liberty of treatment so far as that is consistent with the observance of the rules in Part II. If therefore a local education authority, or any other body of school promoters, desires to arrange a school on lines which are not entirely in accordance with the principles of school planning as set out in Part I., the Board will be prepared to consider other arrangements of the various parts of the building, provided there is good reason to suppose that an efficient building for teaching purposes will thereby be forthcoming. The rules of Part II. deal with the extent of the site, with the solidity of the fabric, with the lighting, warming, drainage, ventilation, cloak-rooms, and sanitary arrangements, and with the adequacy of the entrances and staircases in view of the use of the building by a large number of children. Unless there are circumstances of an exceptional nature, no newly erected building which does not conform with the rules of Part II. will be recognized for use as a public elementary school. These regulations do not constitute a standard by which existing premises can be judged, but must be taken as a guide, having reasonable regard to the principles set forth in these regulations.

Exclusion from School of Children under Five Years.—The Board of Education have at last come into agreement with the opinion which has frequently found expression at meetings of the Society that children under five years of age should not be required to attend school. Article 53 of the Code, which came into force on August 1st, provides that no child may be refused admission to a public elementary school on other than reasonable grounds, and that where the local education authority have so determined in the case of any school maintained by them, children who are under five years of age may be refused admission to that school. In commenting upon this article, Mr. Robert L. Morant says: "Children under five years of age are not required by law to attend school, and there is reason for believing that the attendance of such children is often accompanied by danger to health. There is also a mass of evidence pointing to the conclusion that a child who does not attend school before six years of age or more will, in general, compare favourably, at a later age, with a child whose attendance began at an earlier age. On the other hand, there is no doubt that parents in certain areas desire that their children should attend school as soon after the age of three as possible, or even before that age. The extent to which parents in any locality desire that very young children should attend school, and the weight which should be attached to the wishes of the parents in this matter, are no doubt sufficiently well known to the Local Education Authority to enable them to deal on their own responsibility with the question of admitting or excluding children under five years of age. In these circumstances the Board will now give the Local Education Authority complete discretion on this point, and it will be held under Article 53 that a direction of the Local Education Authority to the effect that children under five shall be refused admission to any particular school or schools is a reasonable ground for excluding such children from the school or schools concerned. If the Local Education Authority so wish, different parts of their area may be treated differently in this respect."

The Board, in coming to the decision indicated, have no doubt been influenced by the recommendation of the Duke of Devonshire's Inter-Departmental Committee on Physical Deterioration, that school attendance in the rural districts should not be compulsory till six or possibly till seven years, and should be discouraged, if not absolutely prohibited, under five years of age. In this connection it is of interest to recall a resolution passed in October last by the Education Committee of Newport (Mon.) in consequence of recommendations made by the Medical Officer of Health (Dr. Howard Jones). The resolution directed that after the end of the year no child under the age of four years should be admitted or retained in the public elementary schools in Newport. Upon hearing through H.M. Inspector of this resolution, the Board of Education wrote to the Committee expressing the opinion that it was undesirable to adopt such a regulation. The Committee remained persistent in their desire to exclude very young children from school attendance, and in March, 1905, the Board stated that they had decided to leave to the option of local education authorities whether accommodation should be provided in rural districts for children under five years of age, but that in urban districts accommodation should be provided for such children if there was a strongly expressed desire on the part of the parents that they should attend school. At the end of June, the Board addressed a communication to other education authorities, to the effect that in future the same right of option would be left to all local education authorities, whether rural or urban, as to whether they will provide school accommodation for children below the age of five years. This decision applies not only to the provision of fresh accommodation, but to the exclusion of such children from existing schools.

PARLIAMENTARY NOTES.

Vaccine Lymph Calves as Food.—Mr. Sydney Buxton asked the Secretary to the Local Government Board whether the carcases of calves inoculated for lymph at the Local Government Board vaccine station were sold for food in London, and if so, whether he would give instructions to have such carcases destroyed instead of being returned to the contractors. Mr. Gerald Balfour answered: I am advised that there is no evidence whatever that the carcases of animals used for the purpose referred to are thereby rendered unfit for food. The destruction of the carcases would, moreover, involve a large additional charge upon the Exchequer, amounting probably to some £4000 a year, and having regard to these considerations I am not prepared to adopt the suggestion. I may add that the carcases are thoroughly examined by a veterinary surgeon before being allowed to be sold for food.

Coccidiosis in Rabbits.—Mr. Morrell asked the President of the Board of Agriculture whether he had information as to the existence of disease of the nature of tuberculosis affecting the liver of the rabbit, specially prevalent this year, and if so whether he would cause inquiry to be made and information laid before the Commission on Tuberculosis as being a disease possibly affecting the food of man. Mr. Ailwyn Fellowes said: I am advised that this disease is caused by an animal parasite, and that it is not of the nature of tuberculosis. Its correct name is coccidiosis. In these circumstances it does not appear to be necessary for any communication to be made to the Royal Commission on Tuberculosis on the subject. It is not considered by the Board's veterinary officers that the disease is attended with any danger to man, but I propose to bring the matter under the notice of the Local Government Board.

Fees for Attendance at Isolation Hospitals.—Sir Charles Welby asked the President of the Local Government Board whether he was aware that, in the case of an isolation hospital having no resident medical officer, it was customary for the local practitioners to attend their own patients; and whether, in the event of any such practitioner being a member of the local authority to which such hospital belonged, it was the practice of the Local Government Board to take any steps to prevent the recovery by him of the usual fees paid by the local authority in such case. Mr. Gerald Balfour replied that he believed that not infrequently patients in isolation hospitals were attended by their own medical men. He was not aware of any case in which the Local Government Board had taken steps to prevent the recovery of fees in such circumstances, but he thought it right to draw attention to the provision in Section xii. of the Municipal Corporations Act, 1882, which disqualified a person for being a councillor of a borough if he had directly or indirectly by himself, or his partner, any share or interest in any contract or employment with, by, or on behalf of the Council. There was a similar provision in the Local Government Act, 1894, as regarded members of urban or rural district councils.

Public Health Bill.—The Chairman of the Public Health Committee of the British Medical Association reports that there is now no prospect of this Bill being read this session. He had been accorded an interview with the President of the Local Government Board, and had subsequently written asking him to receive a deputation, with a view to laying before him the grounds on which the Association would ask the Government to take up the Bill. Mr. Gerald Balfour had replied that the Government could not take up at this period of the session a private member's Bill that had not reached a more advanced position than that reached by the Public Health Bill; that he was in sympathy with the Bill, though details would doubtless require consideration by the Government, and that he would be prepared to receive a deputation from the Association about November, if desirable.

Report of Royal Commission on Sewage.—Mr. Balfour informed the House of Commons that the Commission hoped to issue a report this year dealing with the relative merits of different methods of sewage disposal and certain other questions. He understood, however, that it could not be stated at present when the final report would be issued.

The Staff of a Health Department.—Professor R. T. Hewlett, of King's College, pleads for the recognition of the specialist in the various departments of public health. Proper administration required a Medical Officer and his sanitary staff, a bacteriologist, a chemist, and an engineer, all working cordially together to a common end. For the smaller districts such a staff could be secured by grouping. Could they expect effective action in regard to the housing of the poor, and the sanitary conditions of cowsheds and dairies, if the Medical Officer was a local practitioner who derived his livelihood by the good will of the local landlord?

Decrease in the Population of Small Towns.—In a recent paper by Mr. A. H. Anderson, published in the *Journal of the Society of Arts*, attention is directed to the steady decrease which is taking place in the population of our smaller towns. This fact is one which does not become evident from the reports of the Registrar-General, because in the table of aggregates of urban and rural population the larger and increasing towns and the smaller and decreasing towns are taken together, and the general balance is, of course, one of increase. This is exactly where the tables serve to mask the real condition of things, which can only be ascertained at the cost of considerable trouble in analysis and collation. Mr. Anderson has abstracted this information, and he has re-arranged the towns in accordance with their sizes. As the general result of this inquiry he ascertains that "of towns with a population of 10,000–20,000 one in ten is decreasing. Of towns with a population of 5,000–10,000 one in seven is decreasing. Of towns with a population of 2,000–5,000 one in three is decreasing." In this way he finds that a total of 187 towns had declined in population in the decade ended 1901, and he adds that, "when the character of the towns involved is taken into account the matter becomes almost more serious, for figuring in this list are the names of places that have borne a gallant part in our long and chequered history." He thinks it is high time that the causes of this decadence should be authoritatively inquired into, and among the circumstances inextricably involved with this consideration he mentions the matter of railways and road traffic. The growth of the light railway and the recent development of motor-car traffic might also be examined in this connection, and he advocates the appointment of a Royal Commission to investigate and report upon this important subject.

MIDWIVES ACT.

Cardiff.—The Council of the County Borough of Cardiff have delegated to the Health and Port Sanitary Committee all the powers and duties conferred upon them by the Midwives Act, as the Local Supervising Authority, and the Medical Officer of Health has been appointed Executive Officer. From a recent report of this official, it appears that in Cardiff there are 96 midwives certified under the Act. Of these 83 were certified on the ground of having been in bonâ-fide practice as a midwife for at least one year prior to the 31st July, 1902; 12 on the ground of holding the certificate in Midwifery of the Obstetrical Society of London, and one holding the certificate of the Rotunda Hospital, Dublin.

Training of Midwives in Cardiff.—A comprehensive course of training and instruction for midwives has been established in connection with the Cardiff College of the University of Wales. Dr. Ewan Maclean has charge of the classes. The Cardiff and the Glamorgan Education Committees have contributed to the expenses of this course of instruction, and have the privilege of nominating a certain number of women each term for free studentships. The Committee of the Queen's Nursing Institute at Cardiff have established a Maternity Department, and take pupils for the practical training of midwives. Both the theoretical training at the College, and the practical course in connection with the Nursing Institute, have been recognized by the Central Midwives Board as qualifying for admission to the Board's examinations.

Reading.—The female assistant Inspector of Nuisances has been appointed to exercise, in conjunction with the Medical Officer of Health, general supervision over all midwives practising in the borough of Reading. During 1904 the names of 14 women who were certified under the Midwives Act were entered in the register of midwives.

Payment in Cases of Urgency.—One of the difficulties attending the administration of the Midwives Act lies in the omission of any provision for the payment of a medical practitioner whom a midwife is compelled to send for in certain well-defined circumstances. The Hull Town Council appealed to the Board of Guardians to help them in securing prompt attendance from medical men when it should be required, and also to provide for suitable payment. The Board have decided to pay during the next 12 months a fee of 10s. 6d. to the Poor-law Medical Officers who are summoned by midwives in urgent cases. This sum does not err on the side of extravagance, and the Board when deciding upon it could hardly have realized that the occasions upon which it would be earned would be those of extreme urgency, calling for the employment of considerable skill, and involving no little anxiety on the part of the practitioner. At Cardiff the Corporation have undertaken to pay one guinea to any medical practitioner called in by a midwife, if he is unable to obtain payment from the patient or from the Board of Guardians. The payment is only to be made in cases of flooding, convulsions, or rupture of the uterus.

A Nurse as Executive Officer.—The Hereford County Council have appointed a nurse as the executive officer of the Midwives Act. One half of her salary is to be paid by the County Nursing Association, whose nurses she is expected to supervise.

The Qualification of Inspectors of Midwives.—The following communication from the Royal Sanitary Institute has been considered by the British Medical Association, viz.:—

"Under the Midwives Act a large number of midwives are applying for registration, and in many places Inspectors of Midwives are being appointed.

"It is felt that in addition to their qualifications for their special duties, midwives, and more especially Inspectors of Midwives, should have a knowledge of household sanitation, and the evils arising from insanitary conditions, and how such conditions, when they exist, can be remedied.

"In many instances those applying for the office of Inspector of Midwives have obtained the certificate of competency granted by the Royal Sanitary Institute as Inspectors of Nuisances, and this has been recognized as a useful qualification for the purpose referred to.

"If you have issued any statement regarding this knowledge, or recognized this certificate as a qualification, I should be much obliged if you would kindly let me know."

It was resolved:—

"That it be recommended that the Sanitary Institute be informed that the Association disapproves of the appointment of lay persons as Inspectors of Midwives, except under the direct supervision of registered medical practitioners, and that this opinion be also communicated to the central Midwives Board.

ACUTE GLANDERS IN MAN.

Even in the horse the chronic form of glanders, popularly known as farcy, is of more frequent occurrence than the acute, and the use of mallein has shown that the disease may long exist latent and clinically unrecognizable, but in man the acute form is still rarer. It is, however, so intensely fatal, and attended by such horrible symptoms, that the utmost caution should be observed in making *post-mortem* examinations, and indeed they ought not to be undertaken without absolute necessity, and attempts to save the hide for its pecuniary value ought to be strictly prohibited. In the *Spitalul*, vol. xxiv. p. 349, is a report of a case in the person of a veterinary surgeon who had made a *post-mortem* examination of a horse that had died of glanders, by Drs. Bucaloglu and Stoicescu, of Bucarest. After he had completed the operation he discovered a small cut on the index finger of his right hand, which he at once cauterized freely, and no local symptoms appeared. But on the 19th day he was seized with fever, loss of appetite, and pains in various parts, especially in the right supra-spinal region. The fever and prostration increased rapidly, dullness was early felt over the apex of the right lung, followed by fine moist râles; severe pain and tenderness in the muscles in various parts indicated the formation of deep-seated abscesses, while a pustular eruption, varioloid in appearance, broke out over the whole body, and later the skin became deeply jaundiced. The pus from the eruption and from the abscesses contained enormous numbers of the characteristic bacilli of glanders. Death supervened within a week. The autopsy showed hepatization of the right lung with a large gangrenous abscess therein, and others in the liver and muscles, but neither in the hand nor in the lymphatic glands of the axilla of that side were any changes to be seen. The poison had evidently entered the circulation direct, giving rise to a general septic pyæmia.

LAW REPORTS.

HIGH COURT OF JUSTICE.

COURT OF APPEAL.

April 7th, 1905.

BEFORE COLLINS, M.R., STIRLING AND MATTHEW, L.J.J.

JACKSON *v.* WIMBLEDON URBAN DISTRICT COUNCIL.

Public Health Acts—Drain or Sewer—Pipe draining into single Private Drain.

A pipe which conveys the drainage of several houses belonging to the same owner into a pipe which is a single private drain within the meaning of Section 19 *of the Public Health Acts Amendment Act*, 1890, *is nevertheless a sewer and is repairable by the Local Authority.*

This was an appeal of the Wimbledon Urban District Council from the judgment of the King's Bench Division which is reported in vol. xvi. of PUBLIC HEALTH, p. 797, and the decision of that court was affirmed. The decision was upon a case stated by the justices of Surrey on the hearing of an information by the Council to recover the cost of relaying a drain. The work had been done under Section 41 of the Public Health Act, 1875, and Sect. 19 of the Public Health Acts Amendment Act, 1890. The pipe which was alleged to be a drain was laid in private ground behind a terrace of houses, and all the houses which drained into it belonged to Jackson, the appellant. His contention was that the drain was a sewer and was not a single private drain within the meaning of Sect. 19 of the above Act, as the houses all belonged to one owner. The pipe in question did not go direct into the public sewer, but into another pipe which was admittedly a single private drain within the above section, and this latter pipe discharged into the public sewer. The justices decided in favour of the Council, but this was reversed on appeal, and the Court of Appeal have affirmed this.

Macmorran, K.C., *and Humphreys* appeared for the appellants, *Mayer* for the respondent.

The Court were of opinion that the pipe in question was a sewer within the meaning of the Public Health Act, 1875, Section 4. As the houses all belonged to the same owner, it did not fall within the meaning of a single private drain in Section 19 of the Act of 1890, and the fact that it drained into a single private drain and not directly into a public sewer did not alter the legal status of the pipe.

KING'S BENCH DIVISION.

Feb. 2nd, 1905.

BEFORE LORD ALVERSTONE, L.C.J., KENNEDY AND RIDLEY, J.J.

SANDYS *v.* JACKSON.

Sale of Food and Drugs Acts—Milk—Request of Inspector for sample—No Sale to prejudice of purchaser.

Where an inspector asked for a sample of milk out of a particular churn, and it was given to him and paid for by him, it was held that he could not successfully prosecute the person who gave him the sample under Section 6 *of the Sale of Food and Drugs Act*, 1875, *as there was in fact no sale to the prejudice of the purchaser.*

This was a case stated by the justices of Derby on an information under Section 6 of the Sale of Food and Drugs Act, 1875, for selling milk not of the nature, substance and quality demanded, to the prejudice of the purchaser. From the facts it appeared that the appellant Sandys, an inspector of nuisances, saw some milk cans or churns delivered to be taken to a factory, and at the place of delivery he stated that he required to take samples of the churns, which he took and paid 1½d. The milk was analysed and found deficient in fat to the extent of 12 per cent. He did not ask to be supplied with milk. As the justices were of opinion that he obtained that for which he asked, namely, samples of the churns, the defendant could not be convicted of selling milk to the prejudice of the purchaser, and dismissed the summons.

McCardie appeared for the appellant, and the appeal was dismissed.

ALVERSTONE, L.C.J., said: In this case we cannot interfere with the decision arrived at by the justices. Apart from the payment of the 1½d., all the facts set out by the justices in the case point not to a sale under Section 6 of the Act of 1875, but to the taking of a sample by the inspector under Section 3 of the Amendment Act of 1879. In a sale under Section 6 of the Act of 1875, the vendor, no doubt, takes the responsibility for what he sells, and Section 3 of the Amendment Act of 1879 gives the power to an inspector to procure a sample of milk on delivery to be submitted to an analyst. Now in this case the facts as found by the justices show that the inspector obtained what he demanded, namely, a sample from the churn, and that this request for a sample did not amount to a request to be supplied with milk so as to support an information under Section 6 of the Act of 1875.

KENNEDY and RIDLEY, J.J., agreed.

KING'S BENCH DIVISION.

April 10*th and* 11*th*, 1905.

BEFORE KENNEDY AND RIDLEY, J.J.

WINCANTON RURAL DISTRICT COUNCIL *v.* PARSONS.

Public Health Act, 1875, ss. 94, 95—Nuisance—Sewer or Drain.

A pipe laid by a private person to carry away the surface water from a highway does not become a sewer because another person drains his premises into it. If a nuisance is caused by such drainage, owing to the pipe being broken, the owner ought to cease sending the sewage into it, and so stop the nuisance, although it may be afterwards proved that the pipe was a sewer and repairable by the Local Authority.

This was a case stated by the justices of Somerset on the hearing of a complaint under Sect. 95 of the Public Health Act, 1875, which charged that there existed a nuisance at the defendant's farm arising from a broken drain, that the nuisance was caused by the act or default of the defendant, and that he had been served with a notice requiring him to abate it and had made default.

The part of the drain where the defect existed adjoined a highway and had been laid by an adjoining owner, so as to prevent the surface water of the highway from coming on to his land. The defendant drained his premises into a catch-pit, and from the catch-pit the drainage flowed into the pipe in question. Lower down another house drained into this pipe. The portion of this pipe leading from the catch-pit had from some unknown cause become broken, and this breakage prevented the sewage from flowing from the catch-pit, where it collected and caused a nuisance. It was contended by the defendant that the drain at the point of breakage was a sewer which the local authority were bound to repair. The justices dismissed the complaint.

R. Cunningham Glen appeared for the appellants. *Vaughan Williams* for the respondent. The court allowed the appeal.

Kennedy, J., in giving judgment, said that the respondent could at any moment have stopped the nuisance by ceasing to send the sewage into the pipe. It might be that if there had not been a breakage in the pipe below the catch-pit there would have been no nuisance, and it was contended that the duty of repairing the pipe was on the appellants, and that as they omitted to repair it, that it was from their default and not from the act of the respondent that the nuisance arose. With that contention he did not agree. If the respondent afterwards could show that the pipe was a sewer he might be able to recover from the respondents the expenses he had incurred, but that was no answer to proceedings under Section 95 for non-compliance with the notice. He also thought the pipe was not a sewer. It was made by a private person for private purposes and had not been adopted by the appellants.

Ridley, J., concurred for the same reasons.

Arsenic in Glycerin.—At the Bradford City Police Court on July 4, a firm of chemists were summoned under the Food and Drugs Act, for selling glycerin containing one-thirteenth of a grain of arsenic to the pound.

Dr. W. Arnold Evans, Medical Officer of Health for Bradford, said that the quantity of arsenic in the glycerin was not infinitesimal, as was contended for the defence. A recommendation had been made by a Royal Commission, that local authorities should take proceedings if the amount of arsenic exceeded one-hundredth part of a grain per pound. In this case there was a thirteenth part of a grain. He took the view that persons who went into a shop for glycerin did not want arsenic mixed with it. A fine of £1 was imposed, with 28s. costs.

Pathological Material sent by Post.—The attention of the Postmaster-General has been drawn to the fact that pathological specimens are frequently sent by post by members of the medical profession and other persons, in packets which have not been registered as required by the Post Office regulations. The Postmaster-General desires to give notice that the transmission of such specimens is sanctioned only on the condition that they are handed in at a post office for transmission by registered letter post, and that they are packed in accordance with the regulations published in the Post Office Guide. These regulations, which are necessary for the protection of the Post Office servants and of the public, provide that any deleterious liquid or substance sent by post must be enclosed in a receptacle hermetically sealed, which receptacle must itself be placed in a strong wooden, leathern, or metal case, in such a way that it cannot shift about, and with a sufficient quantity of some absorbent material (such as sawdust or cottonwool) so packed about the receptacle as absolutely to prevent any possible leakage from the packet in the event of damage to the receptacle. The packet must also be marked "Fragile with care." Any person who sends by post a deleterious liquid or substance for medical examination or analysis otherwise than as provided by these regulations is liable to prosecution, even if he be a patient sending something to his medical adviser for his opinion, or a medical practitioner sending something to a laboratory or elsewhere.

PROCEEDINGS OF THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTITUTED 1888. INCORPORATED, 1891.

PROVINCIAL MEETING.

THE Annual Provincial Meeting of the Society was held in the Storey Institute, Lancaster, on Saturday, July 1st, 1905. Present: Dr. J. F. J. Sykes (President), Drs. J. B. Wilkinson, F. W. Martin, A. W. Martin, John Settle, W. L. Hunter, John J. Weaver, H. E. Edlin, G. Parker, James A. Harris, J. H. Wilson, Wm. Berry, E. Sergeant, Meredith Young, Nathan Hannah, W. N. Barlow, and Herbert Jones (Hon. Sec.) The following visitors were also present: Mrs. J. B. Wilkinson, Mrs. F. W. Martin, Mrs. Weaver, Mrs. Swire, Miss Edlin, Mr. Norval Helme, M.P., Colonel Allen (ex-mayor of Lancaster), Mr. Robert Wilson (chairman of the sanitary committee Lancaster corporation), Dr. D. Basil Hewitt (chairman of the Public Health Committee, Cheshire County Council), Mr. T. Cann Hughes, M.A., Town Clerk of Lancaster, Mr. W. French, M.A., F.I.C., Director of Education Lancaster Corporation, Rev. J. Bone, Mr. Lawrence Holden, Mr. Neville Holden, Dr. W. Hall, Dr. G. McElligott, Mr. Alfred Hewlitt, and Mr. W. Taberner.

The Ex-Mayor (Col. Allen), on behalf of the Mayor, welcomed the members of the society and their friends to the ancient borough of Lancaster. He hoped the visit of the society would be very pleasant, and the deliberations not only of benefit to themselves but also to the public in general. He had to express, on behalf of the Mayor, his Worship's regret that an engagement in Liverpool on the previous evening prevented him from attending the gathering at the beginning, but he hoped to be present during the course of the day.

The President thanked the ex-Mayor for the welcome extended to the ancient city. He did not see anything in the programme that would allow the members time to see the many historical and other features of interest in a city that Lancastrians should be proud of. He hoped, however, they would be able to visit at least the Castle.

The minutes of the meeting held at Newcastle-upon-Tyne on July 2nd, 1904, were taken as read, and signed by the chairman as a correct record of the proceedings.*

The Hon. Secretary read letters of regret at inability to be present from Dr. Joseph Groves, Dr. Arthur Newsholme, Dr. Bostock Hill, Dr. John Taylor, Dr. G. Sims Woodhead, Dr. Alfred Greenwood, Dr. T. W M. Garstang, Dr. John Robertson, Dr. Tattersall, Dr. Pringle, Dr. Bennett, Dr. Brindley, Dr. T. R. Bailey, Dr. Marsh, Dr. Cant, Dr. Chronnell, Dr. Laird, Dr. Coutts, and Dr. T. R. Turner.

ELECTIONS.

The President declared the following candidates duly elected:—

AS FELLOWS.

Hope, William More, M.R.C.S., D.P.H., 55, Barton Street, Gloucester. M.O.H. City of Gloucester.

Naismith, James Henderson, M.B., C.M., Tow Law, Co. Durham. M.O.H. Tow Law U.D.

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* *Public Health*, August, 1904, p. 733.

Walker, Allan, M.B., L.R.C.P. & S., L.F.P.S.G., St. Mary's, Argyle Street, Hebburn-on-Tyne. M.O.H. Hebburn-on Tyne U.D.

Coaker, F. W. J., F.R.C.S., 22, High Street, Bromsgrove. M.O.H. Bromsgrove R.D.

Harper, J. R., M.R.C.S., L.R.C.P., Bear Street, Barnstaple. M.O.H. Barnstaple Borough and R.D.

AS MEMBERS.

Goldsmith, B. R., M.B., Ch.B., D.P.H., Monsall Fever Hospital, Manchester.

Sisam, William, M.D., Birmingham General Dispensary, Union Street, Birmingham.

Candidates were then nominated for election at the next meeting.

A discussion took place upon " The Public Health Aspects of Motoring," in which the following took part: Drs. Herbert Jones, Edward Sergeant, J. J. Weaver, William Berry, J. H. Wilson, Meredith Young, W. Hall, Mr. W. French, M.A., Drs. Settle, Hewitt, A. J. Martin, and the President.

The President proposed and Dr. Wilkinson seconded the following resolution, which was carried unanimously.

" That the best thanks of the Society be accorded the Mayor of Lancaster for the use of the Town Hall and Storey Institute in which to hold the meetings."

LUNCHEON.

At the conclusion of the meeting the members of the Society and their friends lunched in the Town Hall, under the chairmanship of the President (Dr. Sykes.)

Dr. J. B. Wilkinson, President of the North-Western Branch, in proposing the health of the Lancaster Corporation, said an old proverb told us that after lunch we should sit awhile, and he was not sure that it was not his duty, as a Medical Officer of Health, to keep them there half an hour for the benefit of their own health. The subject indeed which had been placed in his hands would need even longer than this to be dealt with thoroughly, for to relate all the important events in connection with the town would practically be to recount the history of England, Lancaster, from its earliest times, having been inseparably bound up with the history of our country. Lancaster, to his mind, typified the indomitable perseverance of Lancashire men, for no less than three times the town had been almost completely destroyed, and yet we found it to-day in its present prosperous condition. The Corporation of Lancaster included among its members some of the best men in the county; they were a progressive body who had only one fear, that was, the fear they had that their constituents would think they spent too much money. They were, as he was informed, desirous of making their town a model from a public health point of view, but, as in other districts, money for this purpose was only slowly forthcoming. In public health work very few of the results could be shown immediately; the lives saved could not be ranged in a row before the eyes of the public like the trees in a park, or the books in a library. He thanked the Mayor and Corporation for the hearty welcome they had given the society, and the arrangements they had made for their comfort and enjoyment. He coupled with the toast the name of Mr. Robert Wilson, the Chairman of the Sanitary Committee of the Lancaster Corporation.

Mr. R. Wilson responded, and said in Lancaster we had a good deal to be thankful for as the result of the work and advice of the Medical

Officer of Health. Just after the town had secured the present supply of pure water, Mr. Grant congratulated the inhabitants that the death-rate had been reduced to 26 per thousand. Ten years later the death-rate had been reduced to 22 per thousand, but last year it was only 13·01, and the year before it was 11·01. That was largely due to the Medical Officer and those interested in sanitary matters in the town.

Mr. Helme, M.P., proposed the toast of the "Incorporated Society of Medical Officers of Health," stating that it was the oldest health association in the country. It was so important that its members—numbering about 1,000—included practically all the Medical Officers in the country. The association also produced once a month the journal PUBLIC HEALTH, which contained important information upon aspects of public health that was well worth attention. The work of the association was brought before the public mind in many ways. Lancaster being an old town, with a lot of old property, had had plenty of opportunities of taxing the energies of Dr. Parker, their Medical Officer. In the county they had not so much of that class of work for Dr. Sergeant, but they had a large population, upon whose health and vigour great issues rested. He recognized on behalf of the public the greatness of the work in which the society was engaged, and the fidelity with which the members carried it out. The improved statistics of the death-rate of the country showed that Medical Officers of Health had laboured with success.

The President, in responding, thanked Mr. Helme for the kind words he had spoken in commendation of Medical Officers of Health, which falling from the lips of a member of parliament, and as the representative of this borough, were doubly acceptable, and encouraging to a class of officials always anxious to do their duty to the public. The society was nearly fifty years old, and had now ten branches. It embraces not only municipal and county, but also urban and rural representatives, so that the various aspects of public health are embraced in its work. It is especially pleasing to learn that the death-rate in Lancaster is low, a fact upon which our colleague, Dr. Parker, who has long been a Fellow of the Society, is much to be congratulated. The lowered death-rate of the country generally we claim as partly due to our efforts, although we are modest enough to admit that there are other causes at work as well. Dr. Wilkinson, the President of the North-Western Branch, has already expressed thanks to the Lancaster Corporation for the cordial reception we have received. I cannot refrain, as President of the Society, from adding the thanks of the whole society to the Corporation, saying, in the words of John of Gaunt, time-honoured Lancaster, "Love they to live that love and honour have."

Dr. E. Sergeant proposed "The Visitors," and Dr. D. B. Hewitt, in responding, complimented the Society upon being able to discuss a very controversial subject in a thoroughly judicial spirit and without the least display of acrimony.

Dr. Meredith Young proposed the health of Dr. Parker, the Medical Officer of Health for Lancaster, upon whom had fallen the labour of arranging for the meeting.

Dr. Parker responded.

Visits were then made to the Castle, and to the new Docks which the Midland Railway is constructing at Heysham. Some members travelled in horsed brakes, others in motor cars. Upon returning to Lancaster, tea was provided in the Town Hall by the Corporation.

The thanks of the Society are due to Dr. Parker for one of the most enjoyable Provincial Meetings in the history of the Society.

A resolution was passed expressing the thanks of the members to those gentlemen who had so kindly placed motor cars at the disposal of the Society. Two cars were supplied by Alfred Hewlett, Esq., Haigh, near Wigan, and the Beeston Humber Co. also sent a car from Beeston.

Northern Branch.—An ordinary meeting of the Branch was held in the Council Chamber, Town Hall, Darlington, on Friday the 12th May.

A further discussion ensued on Dr. Jackson's paper on the "*Influence of Infants' Schools on the Health of the Scholars.* The views expressed unanimously coincided with those of Dr. Jackson's paper, and the following resolution was adopted and the Secretary instructed to send it to the Incorporated Society:—

"That the Branch is strongly of opinion that the attendance of children, under 5 years of age, at school, is from a mental, physical, social and financial standpoint objectionable."

Dr. Renney, M.O.H., Sunderland, read a paper entitled: "*Diphtheria, and the Measures to Prevent its Spread.*"*

Dr. Renney was cordially thanked for his paper.

A vote of thanks to the Mayor for placing the Council Chamber at the disposal of the Branch brought the meeting to an end.

Eastern Counties Branch.—The first presidential meeting of the Eastern Counties Branch of the Society of Medical Officers of Health was held at Cambridge on Saturday, 17th June, at the Medical Schools. There were present: Dr. Bushell Anningson, President, the Mayor of Cambridge (Alderman A. S. Campkin), Professor Sims Woodhead, Professor Ridgeway, Dr. Griffiths, Rev. Dr. Stokes, Canon Scott, Alderman Spalding, Dr. H. Cooper-Pattin, M.A. (Vice-president), Norwich; Mr. H. W. Beach (Hon. Secretary and Treasurer), Great Yarmouth; Dr. Sykes (President of the Society); Mr. Herbert Jones (Hon. Secretary); Dr. G. S. Elliston, Ipswich; Mr. J. S. Holden, Sudbury; Major E. C. Freeman, Colchester; Mr. T. W. Richardson, Erpingham; Dr. Armistead, Stapleford; Dr. J. N. Collins, Peterborough; Dr. F. E. Apthorpe Webb, Cambridge; Mr. Harry (Borough Surveyor); and Mr. J. O. F. Pink.

Dr. Anningson delivered his Presidential address† which was illustrated by a number of views of old Cambridge.

A vote of thanks was accorded to the President on the motion of Dr. Armistead, seconded by Dr. Collins.

The members afterwards were entertained by the President at luncheon at Caius College. The toast of "Prosperity to the Town" was responded to by the Mayor; Dr. Cooper-Pattin proposed "The Master and Fellows of Caius College," to which Professor Ridgeway responded, and referred humorously to the development of sanitation in the University.

After a round of visits to various Colleges, the day's proceedings concluded with a garden party at Walt-Ham-Sal, Dr. Anningson's residence, where the guests (100 in number) were received by Mrs. Anningson. The Cambridge Borough Police Band played a selection of music.

THE French Académie de Médecin has awarded, through the Minister of the Interior, a silver medal to Dr. Alan Green, bacteriologist in charge of the Vaccine Lymph Department, Lister Institute of Preventive Medicine, for his work on Vaccine, published in the Proceedings of the Royal Society, and in the Report of the Medical Officer, Local Government Board.

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* See p. 704.

† See p. 715.

CURRENT PUBLIC HEALTH LITERATURE.

La Salute Pubblica, Vol. XVI.

(No. 191.) Whooping Cough and Measles in Italy. Dr. Guido P. Ruata. Statistics from 1887 to 1900 in age periods.

(No. 192.) Deaths from Rabies in Italy, from Report of the Director-General of Statistics, 1887-1901.

Zeitschrift für Hygiene and Infectionskrankheiten,

Vol. XLVIII., Part I.

1. The Rendering of Phthisical Discharges Innocuous. Dr. Noetel, University of Breslau. (This article is divided into two parts, the first of which deals with the collecting of sputum in spittoons, and the subsequent dealing with it; and the second with the clothes of phthisical patients. In the first part the author mentions some experiments which he conducted with a view to showing that the filling of the spittoons with dry material, such as coffee grounds, sawdust, wood wool, etc., constitute no greater danger of spreading tuberculosis than filling them with fluids. He states that the danger with tuberculous sputum is when it is spat on the floor, gets comminuted by the feet, and mixed with dust, and not when it gets dried in a spittoon, suitably filled with absorbent material. If some dry material is used it is much easier to get rid of the sputum by subsequent burning. In the second part of the paper the author shows that the clothes of phthisical patients get impregnated with tubercle bacilli, and therefore require to be regularly disinfected. For this purpose, he thinks, a mixture in definite proportions of formalin and water vapour is the cheapest, most effectual, and least injurious to the texture, especially if the process has to be frequently repeated.)
2. The Connection between Infant Feeding and the Development of Pulmonary Tuberculosis. By Dr. Albrecht Speck, University of Breslau. (This and the following contribution deal with the recent statement of v. Behring, that "the milk used for sucklings is the chief source from which phthisis develops." As the chances of receiving tubercle bacilli through the mother's milk are insignificant, and the amount of milk used from other animals than cows is exceeding small, the statement made by v. Behring resolves itself into this, that the chief source of phthisis in adults is the cows' milk on which they were nourished as infants. He states "that the introduction of tuberculous material into the system of sucklings through the intestinal canal almost always leads to a latent stage of tuberculosis; that it renders the infected organism less resistant against accidental fresh infections of tubercle bacilli acquired later, and is the source of phthisis among adults." This view has provoked great opposition, and among those who cannot accept this view is Prof. Flügge, who draws attention in two publications in the *Deutsch Medicin. Wochenschrift* to the fact that many phthisical subjects during their early infancy never touched the milk of the lower animals at all. It is at the suggestion of Prof. Flügge that the author of this paper has extended the investigation on this line. He begins by referring to two works

which treat of the subject in this aspect. The first is in vol. i. of *Entstehung und Bekämpfung der Lungentuberculose*, by Jacob and Pannwitz, 1901, in which the authors made accurate inquiries into the question of the kind of milk used in the early feeding of 3,295 patients who were undergoing treatment in various sanatoria. In the case of 2,921 they received definite answers with the following results:

Mothers' milk	1877
Cows' „	443
Mixture of both	525
Goats' milk	25
Mixture of mothers' and goats' milk ...	43
Cows' and goats' milk	1
Food preparations	7

From this list the question of infection by tubercle bacilli can be excluded from:

1. The 1877 nourished with mothers' milk.
2. „ 7 „ „ food preparations.
3. „ 25 and 43 nourished with mothers' and goats' milk,

because tuberculosis of the udder is very rare in goats. Putting therefore these figures together, the proportion of phthisical patients in which the inception of tubercle during the first few months of life can be excluded to those nourished during the same period with cows' milk is approximately 2 to 1. These figures might be used to support a view just as well that mothers' milk is the origin of tuberculosis; on the other hand, they do not necessarily inculpate cows' milk, since there is no information of how much of the cows' milk may have been boiled, and of course other sources of the acquisition of tubercle are not excluded. The second work referred to by the author is the *Deutsche Medicinalzeitung* (March, 1904). In this, Dr. Schröder contributes a paper, entitled, "Contribution to the Question of the Significance of the Food of Infants in the Production of Phthisis." He made a series of inquiries among phthisical patients in sanatoria, the difference between them and the previous inquiries being, that whereas the former put their question on the kind of milk used among a lot of other questions, Dr. Schröder asked the simple question of the kind of food used during the first six months of life. His answers were:

Artificially nourished	61	=	23 per cent.
Breast milk	203	=	77 „

He concludes from this, that "our results do not overthrow v. Behring's theory, they qualify it, and limit its postulates. The food of sucklings in its customary form does not decide the question for or against infection with tubercle, and is not its chief source." The author mentions in this connection a small inquiry by Dr. Servaes on the same lines, and with exactly the same result. From the above works he conceived the idea of extending the inquiry, and for this purpose addressed a number of queries to the directors of various sanatoria for phthisis throughout the country, and physicians in private practice, the results being set forth in a table.

Source of Statistics.	Total of positive Statements.	Human Milk.	Cow's Milk, Etc.	Percentage.	
				Human.	Cow's, Etc.
I. Out of literature—					
1. Jacob & Pannwitz	2921	1952	969	67 per cent	33 per cent
2. Schröder	264	203	61	77 "	23 "
3. Servaes' Report ...	99	63	36	64 "	36 "
II. His own inquiry—					
1. Sanatoria	4467	3455	1012	77 "	23 "
2. Physicians ...	259	181	78	70 "	30 "
Total ...	8010	5854	2156	73 "	27 "

From general considerations, such as the probability that a certain number of those taking cows' milk, have it boiled; and that those stated as having taken mixed food include a certain proportion taking human milk, and another small number having taken goats' milk, etc., he concludes that *at least* 75 per cent of phthisical patients must have acquired tubercular infection elsewhere than in cows' milk; in other words, that cows' milk as a source of infection is absolutely excluded in 75 per cent of phthisical patients, the postulate which he makes out of these numbers running thus: "Cows' milk as a factor in the development of phthisis in human beings may be left out entirely, or only given a trifling amount of consideration.")

3. Statistical and Ethnographical Contributions to the Question of the Relationship of Infant Feeding to Phthisis. Dr. Bruno Heymann, University of Breslau. (In this paper the postulate of v. Behring is called in question from a different standpoint than the last. Here the author has chosen nations and localities where artificial feeding of infants is either practically unknown, or insignificant in amount, and shows that in these phthisis is quite as common, and in one or two much more prevalent, than in those countries where cows' milk and artificial feeding are widely indulged in. The first country dealt with is Japan. The author quotes from statements by three eminent physicians of this country on the use of cows' milk, and next enters minutely into the prevalence of phthisis. It seems that forty years ago cows' milk, and preparations made from it, were unknown in Japan, and that even at the present day, apart from its high price, the inhabitants do not care for it, and use it chiefly under medical advice. Cows' milk is very sparingly used for feeding infants, and breast feeding is the rule, many mothers suckling their infants for two or three years. "In Japan we have thus before us a country in which, according to v. Behring, the principal cause of phthisis at the present day can be only operative in a very limited degree. If we however, to make certain, exclude those born within the last twenty-five years, and confine our attention to those born previous to that date, we have here a material which should prove v. Behring's statement, by the absence of tuberculosis among the people above twenty-five." This it does not do, for, as the author goes on to prove, phthisis is widespread in Japan. Previous to 1875 there were no reliable statistics, but from

historical works it was ascertained that tuberculosis was a well recognized and prevalent disease from remote times. Since 1875, when mortality statistics were first published in English, their accuracy has been gradually improved. The deaths from phthisis per million were :—

Japan, 1891-5	1854
England, 1894-7	1858
Germany, 1894-7	2245

from which it appears that phthisis is at least as prevalent there as in England. Other statistics are brought forward to confirm this view. In Tokyo the figures are very much higher, the number per million (1891-5) being 8,978 as against 1,768 for London (1894-7). The author thus comes to the conclusion that cow's milk cannot be responsible for phthisis in Japan, considering it is so widespread among those classes which have not drunk it either in early or later childhood. The next country under review is Turkey. In this the author quotes the opinion of Professor Rieder Pascha, who states in a recent work, entitled, *Für die Turkei*, that "after extended experience, the food of infants in town and country, even in the highest circles in Constantinople, is the breast of mother or wet nurse." Here milk, butter, or fresh ox flesh, are rare commodities, and the hard cheese which they use is made from strongly heated cows' milk. Notwithstanding this, the statement is made that in the country tuberculosis is " common," and in Constantinople " extraordinarily widespread." This is attributed to the fatalism inculcated by the Mohammedan religion, and the dirty habits of the people, who spit everywhere, and use cups and vessels for food in common. It is most widespread among those classes of the population where cows' milk as an infantile food is never used. The third country mentioned is Greenland. Here, on Nansen's statement, children are exclusively breast fed, but that tuberculosis "among the natives is tremendously widespread," so much so, that " hæmoptysis among them doesn't excite any more attention than a transitory bronchitis or hoarseness among us. It seems easier to count those who haven't had phthisis than those who have." He attributes this prevalence to their huddling together in small, ill-ventilated huts, and their dirty habits in disposing of sputum. In the fourth division, the author takes "other countries, districts, and towns." The comparative mortality figures show that phthisis is not less prevalent among those peoples who feed the infants on breast milk, and that in some towns, such as Berlin, the mortality from phthisis is steadily decreasing, while the prevalence of artificial feeding is going in the opposite direction. Reviewing the sum total of these statistics and ethnographical communications Dr. Heyman states as his conviction, that "cows' milk as a food for infants can only bear a very small share in the development of tuberculosis.")

4. The Discovery of Influenza Bacilli in Tonsils and Larynx, being at the same time a Contribution to the Question of Bacilli resembling those of Influenza. Dr. Max Auerbach.

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SPECIAL NOTICES FOR THE MONTH.

JUBILEE OF THE SOCIETY, 1905–1906.

In connection with the Jubilee of the Society arrangements are now being made to hold an International Congress and Exhibition dealing with *Food and Food-stuffs, etc.*, in London during the summer of 1906. The following sections have been decided upon :—

- Economic—
  - Supply, Transport, etc.
- Chemical and Bacteriological.
- Physiological.

Further details will appear in subsequent issues of *Public Health.*

MEETINGS OF THE SOCIETY.

1 Upper Montague Street, Russell Sq., London, W.C.

Friday, October 13th, 1905. Annual Meeting. Presidential Address, Sir Shirley F. Murphy.

Friday, November 10th, 1905. "A comparative study of the Lincoln, Maidstone, and Worthing Epidemics," Dr. Christopher Childs.

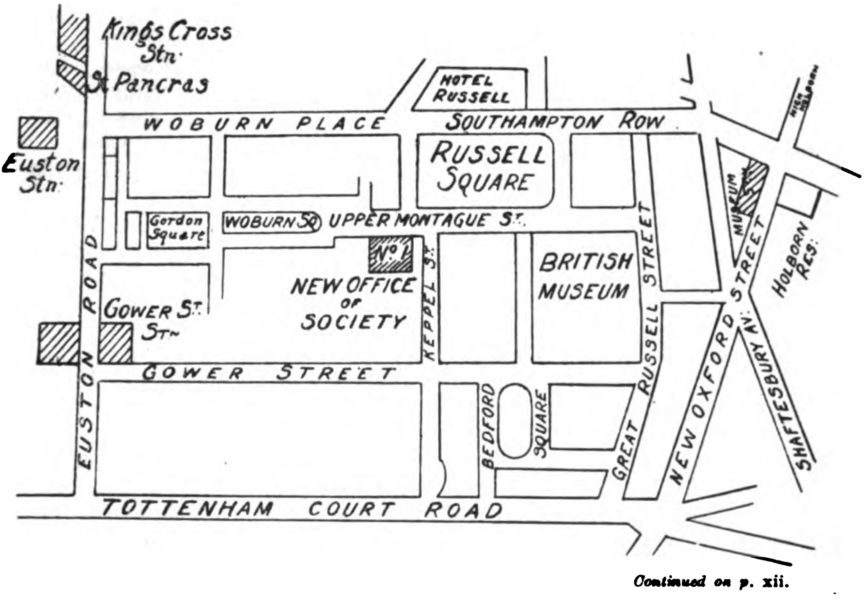
Friday, January 5th, 1906.
Friday, February 9th, 1906.
Friday, March 9th, 1906. Dr. Philip Boobbyer.
Friday, April 13th, 1906.

The next election of Fellows will be in October, in which month a new volume of *Public Health* begins. The present time is therefore most suitable for nomination.

Northern Branch.

October 27th. At Newcastle-on-Tyne.

The new premises of the Society, **No. 1, Upper Montague Street, Russell Square, London, W.C.** The house is at the N.W. corner of Russell Square, and may be conveniently reached from Tottenham Court Road, and by omnibuses running through Russell Square between King's Cross, St. Pancras, Charing Cross, Victoria, and Waterloo stations.



Continued on p. xii.

On the ground floor are the library, reading room, and Executive Secretary's office ; on the second floor are rooms fitted up for meetings of Council and of the Society.

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RETURN CASES OF SCARLET FEVER AND DIPHTHERIA. SCHEDULE OF ENQUIRIES.

Additional copies of the Schedule may, at any time, be obtained free of charge from the Hon. Secretaries, 1, Upper Montague Street, Russell Square, W.C.

SPARKLETS.—WE have been using for some time one of the new improved pattern Sparklet Syphons, and think our readers should have its merits brought under their notice. It is scarcely necessary to explain what a Sparklet Syphon is, but in case any one should not know, we would say it is a bottle very similar to the ordinary syphon, with an apparatus attached, whereby the contents may be easily impregnated with pure carbonic acid gas; thus at a small cost an aerated water may be had, or by the addition of soda, potass, lithia, or other salts, any kind of medicated water may be produced. In order to simplify the process, tablets (known as "Sparkloids") of various salts are provided, and by such means any of the foreign medicinal mineral waters may be obtained. The benefits accruing from the use of such waters when the salts have been recently dissolved in freshly prepared carbonated water, are well known to the profession.

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Continued on p. xiii.

Pure Milk for Poor Babies.—The movement for the supply of sterilized milk to poor mothers unable to nurse their babies, which was started in France under the name of "Goutte de Lait," has spread to several other countries, and has developed to such an extent that it is thought the time is ripe for an international congress on the matter. It is to be held in Paris on October 20th and 21st. The Presidents of the Organizing Committee are Dr. G. Variot, Physician to the Enfants-Malades, and Dr. Léon Dufour, of Fécamp, Founder of "Goutte de Lait." The Vice-Presidents are Dr. Richardière, Physician to the Enfants-Malades; Dr. Boissard, Obstetric Physician to the Paris Hospitals; Dr. Raoul Brunon, Director of the Medical School of Rouen; Dr. McCleary, of Battersea, Director of the Infants' Milk Depot; Dr. Rafael y Cordona, founder of the Madrid "Goutte de Lait"; Dr. Davel, of Buenos Aires; Dr. E. Lust, founder of the "Laiterie Moderne," of Brussels; Doctoress Margouliez, founder of the St. Petersburg "Goutte de Lait"; and Doctoress Champendal, founder of the "Goutte de Lait" of Geneva. The Secretaries are Drs. Paul Roger, Physician to the Hospital Péan, in Paris, and Grasset, Director of the "Goutte de Lait" of Tours. Those wishing to take part in the congress should communicate with Dr. Paul Roger, 39, Rue de Berry, Paris.

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CONTENTS.

No. 12, Vol. XVII., September, 1905.

SPECIAL ARTICLES— PAGE

Application of Housing of Working Classes Acts in Rural Districts (*T. W. H. Garstang, M.A., D.P.H.*) - 747
Treatment of Discharges in Scarlet Fever Patients (*Wm. McCallin, M.D., D.P.H.*) 757

ANNOTATIONS—

Proportion of Sexes in U.S. 756
Ophthalmia Neonatorum - 760
Co-Operative Dairying (*H. C. Fairfax-Cholmeley*) - - 761
Milk of Cows, &c., Immunized Against Tuberculosis - 765
A Contribution to Study of Vital and other Statistics of Jews in United Kingdom 766
Home Work Order - - 768
Death Rates in Rural Districts in County of Nottingham, Higher than Urban Rates (*Henry Handford, M.D., F.R.C P., D.P.H.*) 769
An Improved Method of Calculating Birth-Rates 770
The Effect, as Shown by Statistics, of British

ANNOTATIONS (*continued*)— PAGE

Statutory Regulations Directed to the Improvement of the Hygienic Conditions of Industrial Occupations (*Leonard Ward*) 771
Phosphorus in Matches - 772
Insanitary Property and Rehousing in Liverpool - 772
An Epidemic of Sore Throat (*Alex. Robb, M.A., M.D., D.P.H.*) 773
Separate Collection of Waste Paper - - - 773
Effect of Alcohol on School Children (*T. A. Macnicholl*) 774
A Study of Process of Nitrification with Reference to the Purification of Sewage (*Harriette Chick, D.Sc.*) - 775
Experimental Measles (*Ludvig Hektoen, M.D.*) - 776
Prophylaxis of Lobar Pneumonia (*J. M. Anders, M.D.,*) 777
Unidentified Forms of Tropical Fever - - 778
Producer Gas for Fumigating Ships - - - - 779
Female Sanitary Inspectors 780

Continued on Page vii.)

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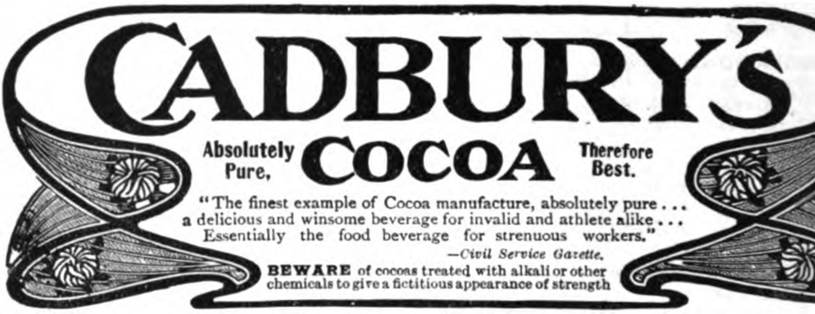

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PUBLIC HEALTH:

The Journal of the Incorporated Society of
Medical Officers of Health.

VOL. XVII. No. 12. SEPTEMBER, 1905.

THE APPLICATION OF THE HOUSING OF THE WORKING CLASSES ACTS IN RURAL DISTRICTS.*

BY T. W. H. GARSTANG, M.A., D.P.H.,
Medical Officer of Health for Knutsford, etc.

YOU have all heard of the history of Ireland, one of whose chapters was headed "Snakes in Ireland," and the body of the chapter contained the words, "There are no snakes in Ireland." Similarly I feel almost inclined to say, "There is no application of the Housing of the Working Classes Acts in Rural Districts." Consider, for instance, the story told by Mr. Drinkwater, of the Levenshulme Urban District Council, in the *Journal of the Sanitary Institute* (Manchester Congress, 1902), where, in a village in Cambridgeshire, he "went into a house, which should rather have been called a den. No sunlight nor even fresh air could get into the room. The area was about 13ft. 6ins. square, and the window 21ins. square. He asked for a cup of tea, but the old lady replied that she was sorry, but the water was very bad. He made enquiries into the water supply, and he found a well on the village green, and the poor woman pulling the water up from a depth of 27 feet. He came to the conclusion that there was some contamination in the well, and made enquiries as to whether sewage matter got into it. An inspection of the well was made, and they found a young pig that a farmer had lost several weeks previously. That was only one illustration of the bad condition of the rural districts. He visited hundreds of cases not quite so bad as that, but nearly so." Now, dismissing the obvious peculiarities of this story, what does it amount to? A room 13ft. 6ins. square is no bad room; if the window was only 21ins. square, and would not open, the remedy is neither difficult nor costly; a public well, 27ft. deep, is a source of supply that I know many villages would be only too delighted to have; and if a pig was drowned in the well, that points only to defective walling or protection, for which the surrounding tenants were probably more responsible than the owner. Look at it as you will, I cannot see that the case proves any necessity for the application of the Housing of the Working Classes Acts. I have, of course, only selected it as a specimen. It makes an effective platform illustration before an uncritical audience, but will ill bear examination by a society of experts.

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* Read at meeting of the North Western Branch of the Society of Medical Officers of Health, on June 16th, 1905.

Miss Constance Cochrane, of St. Neots, Hunts, is a well-known writer and speaker on the same subject. Among her statements are the following: (1) That in the country tenants dared not complain of sanitary defects because of arousing the wrath of landlords, and, perhaps, also of the Sanitary Authority itself; (2) That many villages had no drains, no water supply, houses in bad condition and insufficient in number; (3) That the Inspector of Nuisances and the Medical Officer of Health were underpaid, were therefore not the best men that could be got, and were often demoralized by their Sanitary Authorities. She describes the straits of a village without a water supply in language both vigorous and picturesque; she describes houses without privies, privies adjoining the pumps which furnish the water supply; cottages dilapidated and unfit to live in; and sad overcrowding. I have the greatest possible sympathy with the sufferers under each heading of these complaints; but my observations to-day are limited to the consideration of one particular Act, and I must again repeat my conviction that this Act is not the proper remedy for the defects, except, perhaps, in the one particular that it may be used by the Medical Officer of Health, if supported by his Authority, to obtain the absolute closing of one or more houses unfit for habitation, as a lever by which to compel the reluctant owners of other similar property to put it into decent repair, when other means have failed. And, even so, it is like using a steam-hammer to crack a nut. (Part II., Sect. 30.)

We will now call another witness, Mr. W. Bland, who was President of the Conference of Sanitary Inspectors at the Manchester Congress, 1902. He says: "In addition to dealing with town dwellings, rural districts require attention. Old, dilapidated cottages are too much in evidence; built originally with no pretence at sanitary requirement, they have—through years of dilapidation—become a danger to their occupants; they do not produce overcrowding upon space, but their defects, both of structure and of design, make against all the benefits that abundance of pure air, which fortunately surrounds them, would give. The rural labourer for the most part requires re-housing, and increased provision is wanted, so as to retain the surplus population in our villages. If the present owners are unable or unwilling to deal with the case, the Rural Councils should take the matter in hand, and thus in some measure check the flowing tide of humanity into cities and towns." Matters are mentioned here, again, deeply interesting in themselves, and a fair specimen of the line of thought which leads to a demand for the application of the Housing of the Working Classes Acts to Rural Districts; and yet, critically examined, they prove to miss the mark; as, for instance, where the expression (above) "that abundance of pure air which fortunately surrounds them," proves at once that they do not come under Part I of the Act, which deals with "Unhealthy Areas"; and although Part II, "Unhealthy Dwelling Houses," *can* be applied, it has been hinted above that it is found too cumbersome in practice. And the suggestion that "Rural Councils should take the matter in hand," only shows, if I may respectfully say so, the writer's ignorance of the idiosyncrasies of those bodies. All operations under this Act, as will be presently shown, are necessarily costly; and the Rural District Council has yet to be born, which will voluntarily initiate and undertake costly schemes, of which they cannot understand the prospective value, or which they declare would be for the benefit of particular property-owners.

Mr. Bland also says: "The unhealthy conditions under which we find many persons living are often the creation of their own neglect"; and after elaborating the theme, he says: "Until some more stringent means be adopted to teach such people their duty, much of the work which Sanitary Authorities carry out to improve the health of their districts will fall short of the desired end;" which I take to mean that the application of the Housing of the Working Classes Acts will not cure the faults of ignorant and dirty tenants.

So far I have had in my own mind the "Rural" District proper, as distinguished from the neighbouring small "Urban" District; and I am of opinion that, in such districts, defects can properly be remedied by owners, and that the Housing of the Working Classes Act has little, if any, genuine application. Therefore, to prevent the discussion ending before it has begun, I am compelled to believe that the word "Rural" in the title really means all the country outside the Boroughs (Municipal or County), which is a common use of the word, although not strictly accurate according to the nomenclature of Local Government. In this sense, the subject immediately attains to greater importance; because it is precisely the small "Urban" Districts which perpetuate the evils so graphically described as belonging to "Rural" Districts, with just sufficient concentration of insanitary conditions in regard to area occupied, to bring to everyone's mind the desirability of enforcing the provisions of this Act.

The problem may be briefly defined as the difficulty of providing sufficient suitable accommodation at reasonable cost for persons of the working class "displaced from insanitary houses or areas"; and I hope to be able to show you immediately that the real crux is contained in that one word "cost." For instance, and in passing, accommodation can be provided in London if the tenant can pay a weekly rent of 7s. to 10s., but the requirement, and the unattainable requirement, of the tenant is, that the rent shall not exceed 5s.; and in a little country town, with which I am acquainted, very careful calculations have been made, which show that the Council could meet all requirements at a weekly rental of 5s., except the one requirement of the tenant that the rent shall not exceed 2s. 6d.!!

Before concluding with a reference to the Housing of the Working Classes Act itself, I should like to tell you briefly what has happened within my own knowledge. A small township, containing a large village, obtained from the County Council independent sanitary authority; in other words, from being one among thirty, governed by a Rural Council composed of thirty members, one from each, it became an Urban District, self-contained, with a Council of twelve of its own leading inhabitants. There were notorious slums, or comparative slums, even in this pretty village; and the Council had an honest desire to improve them. Under Sect. 5 of the Housing of the Working Classes Act, 1890, the Medical Officer of Health accordingly "made an official representation" as to two small defined areas, and, according to Sect. 79, he made it in writing; whereupon, under Sect. 4, it became compulsory on the Council to "take the representation into their consideration"; and their action also was compulsory under two conditions, viz. (1) "If satisfied of the truth thereof" (which they were), (2) "And of the sufficiency of their resources;" and this latter condition could not be fulfilled. Land was dear, and after considering every possible scheme and suggestion from every point of view, for a period of twelve months or more, they were forced to the conclusion that they could not build under a weekly rental of 5s., to cover outlay and upkeep; whilst the class to be benefited could not afford to pay more than 2s. 6d., or possibly 3s. 6d. at the outside. Thus the scheme fell through; and matters have remained for many years at a standstill. In the meantime private enterprise has built a number of superior cottages, rented at 6s. to 9s.; and these have been filled by clerks and warehousemen from Manchester, without affecting or relieving the local housing conditions of the working classes.

With the above considerations borne in mind, it will be well now to glance at the Housing of the Working Classes Act, 1890, itself. This Act repealed 15 other older Acts dating from 1850 onwards; and consists of 103 sections, arranged in 7 parts, and has 7 schedules. There have been further Acts passed in 1894 and 1902.

In the Act of 1890, Part I deals with the removal of insanitary areas, and the formulation of improvement schemes properly so called. Part II provides the machinery for the removal of obstructive dwellings, and for the closing of unhealthy isolated houses, or small groups of houses, belonging to one owner. Part III deals with the provision of lodging-houses for the working classes. These are the principal parts of the Act. Mr. Peter Addie said at the Birmingham Congress in 1898: "It is interesting to note, that while the existing Act and its predecessors were designed for the express object of housing the working classes, they have been used chiefly as towns improvements Acts." If this be the case in Boroughs (to which he was alluding) what likelihood is there of the Act being better administered in a Rural District?

Part I begins by placing upon the Medical Officer of Health the duty of officially reporting an unhealthy area; either because (*a*) houses, courts, or alleys are unfit for human habitation; or because (*b*) the narrowness, closeness, and bad arrangement, or the bad condition of the streets and houses, or groups of houses, within such area, or the want of light, air, ventilation, or proper conveniences, or any other sanitary defects, or one or more of such causes, are dangerous or injurious to the health of the inhabitants, and so on. Then the Local Authority must take this representation into consideration, and are to be satisfied of the truth thereof, and of the sufficiency of their resources. How many schemes will get beyond this point? Personally, I know of none; but Dr. W. J. Simpson stated on the 7th inst. that 14 Rural District Councils had taken action (this is in 14 years!), of which only 4 got to the building stage; and the total result is 32 houses! Fourteen of these are at Penshurst, in Kent, and four at Bralton, in Wilts, and these are financially successful. Eight at Thongoe, in West Suffolk, are a financial loss; and the remaining six are being built at Bradwell-on-Sea, Essex, at a cost of £1,400. I have, therefore, no hope of the true Rural District. Perhaps, however, an Urban District might feel inclined to go further. Then they must get out a complete improvement scheme, with plans and estimates; the scheme must be advertised; the Local Government Board must hold an enquiry; and, if convinced, will issue a provisional order, which must be confirmed by Parliament. Now let me tell you, on the authority of Dr. Scurfield, how this worked out in Sunderland. Half-an-acre (out of a larger total) was reported in August, 1893. The improvement scheme was completed in September, and advertised in October, 1893. The Local Government Board enquiry was held January, 1894, and the Provisional Order made in May. Purchase of property was advanced by September, 1896, and a competition for designs was advertised. The prizes were awarded in January, 1897, and the plans approved in March, amended, again approved in June, and finally sent to the Local Government Board in July. Modifications were required, further enquiry was held, and in the summer of 1898, when the story was told, nothing had been done, though five years had elapsed since the first steps were taken. Sunderland is neither a Rural, nor a small Urban, District. With this experience before us, can we hope that this Act, Part I, will be of any use to a Rural District? Part II begins, as before, by making it the duty of the Medical Officer of Health to report insanitary houses. It is then the duty of the Authority to have them closed, and possibly demolished; but an appeal lies to the Court of Quarter Sessions, and tedious litigation may ensue. I have myself several times reported houses in this manner, but I have never yet seen any proceedings taken; and if an Authority chooses to ignore my representation, thereby itself deliberately breaking the law, there does not seem to be any superior Authority which cares a rap about it. Certainly neither County Council nor Local Government Board have ever assisted me. Perhaps they are ignorant of the facts. Then the sooner they give me Fixity of Tenure, the better it will be for the administration of the Housing of the Working Classes Act. Part II continues next to deal with groups of houses, and we get back practically to the provisions of Part I. Part III deals with the erection of Lodging Houses, but Rural Authorities are excluded from its powers, except they get a special permission from the County Council. It is hardly necessary to go into greater detail, I think, though much more might be said as to the nice things which the Act intended to place within the power of small authorities, because it is clearly very unlikely that they will ever be "within the domain of practical politics."

The literature on this subject is of great extent. No Congress has been held for many years past at which papers and discussions have not been in evidence. Journals of Transactions are full of these records. It would almost seem that everything had been said that could be said. And still we "get no forrader. Dr. Simpson's paper is the latest, having been read only ten days ago. He emphasizes the scarcity of cottages in Rural Districts, and the resultant overcrowding, with its accompanying physical and moral ills. He roundly declares Part III to be a failure, showing that only four Rural Councils, out of a total of 587, had carried out building operations.

The question of bye-laws now comes into the consideration of building possibilities; and I had intended briefly to discuss it; but my introduction is already getting too long, and the subject is one which will carry an entire discussion of its own; I, therefore, purposely omit it to-day, and will merely quote Dr. Simpson's dictum: "There is no incompatibility between cheap cottages and the enforcement of proper and suitable bye-laws which shall secure healthy homes; but there is an incompatibility between cheap cottages and healthy homes, when every one is allowed to build as he pleases."

More than half the Rural Districts are without bye-laws; so that in them any kind of building can be erected.

As to a labourer's cottage, I would insist (from my own experience) that three bedrooms should be the minimum of size; that two at least of them should contain a minimum of 1,000 cubic feet; that there should be fireplaces in these two; and that all the windows in the house should be made to open. The necessity for a pantry, or larder, in a convenient place and in a sanitary condition, has often been alluded to. A cottage of this class, whether alone or in a small block, it must be remembered, has no public water supply, no sewers, and no scavenging. Each of these matters has to be attended to by the tenant, by himself, and for himself. Hence the absolute necessity of an area of ground to belong to, and, if possible, to surround, each cottage. The amount required is not less than one-fifth of an acre. Certain urban requirements are out of place; for instance, the "paving of back-yards," because here there is no "back-yard," but a garden instead. Of course the ordinary requirements of good foundations, weatherproof walls with a damp-course, and so on, should be insisted on; but, personally, I think more liberty might be given in the materials used. In particular, why should not wood be more largely used? The danger of fire prohibits it in populated areas; but for single cottages this public danger does not exist, and the danger to the cottage itself is exaggerated. No doubt, brick or stone is theoretically better; but if you had to choose between a dilapidated ancient stone cottage, and a new modern cottage of lighter material (wood or other), I fancy I know what most people would prefer. I mention this because the question of cost is here again a powerful factor. The problem of the moment is a cheap cottage. Possibly the "Cheap Cottage Exhibition," which is to be held next month, may help to solve it. At the same time it is not likely to solve the whole problem, but only that part of it relating to structure. I cannot do better than quote Dr. Simpson again: "The requisites of a healthy house in a Rural District are, that it should be dry, well lighted, well ventilated, in good repair, warm in winter, cool in summer; it should be provided with a good water supply, and should possess sufficient space around it for ventilation of its parts, also for the accommodation of its out-offices, and for the proper disposal of excreta, kitchen refuse, and slops, without being a danger to health or an offence to the inmates of the house or neighbours, and without any risk of contamination of the well on the premises. None of these essentials can be dissociated from one another."

The landlord, the speculative builder, and the householder, all enter into the question also; in fact, it is far from being as simple as it would seem.

Sir William Grantham's case can hardly escape mention; and, with regard to bye-laws, the following is a summary of the statements made to the President of the Local Government Board by a deputation.

"That the bye-laws governing the building of cottages in the country are enforced by those who either have (*a*) No knowledge of the *locus in quo;* (*b*) No knowledge of the wants and requirements of the district; (*c*) No ability to administer them; (*d*) An interest against the landlord or person desirous of building; (*e*) A desire to administer bye-laws suitable for towns, but most unsuitable for country districts; or (*f*) a desire on the part of the Councils, or of the officials of the Councils, to strain the language of the bye-laws against the building-owner, and instead of assisting him, throwing every obstacle in the way of his carrying out the desired work; and that hundreds more cottages would have been built all over the country, which would have prevented, to some extent, the people from crowding into the towns, if there had been—(*a*) More suitable bye-laws; (*b*) An elasticity allowed to those who administered them; or (*c*) If there were no bye-laws in those places or districts where there is no necessity to enforce them."

Another large and interesting subject is that which includes all building conditions; but this, again, seems outside the present discussion, and is, therefore, passed over.

There is a Bill now before the House of Lords, introduced by Lord Hylton, which aims at abolishing all control over the sanitary requirements necessary for the building of a healthy house; except only the drainage and closet arrangements. This can only be characterized as lamentably retrograde. It certainly conflicts with the opinion of the Local Government Board, as officially stated in a circular to Sanitary Authorities on the Housing of the Working Classes question, dated 23rd June, 1900, which concludes in the following words:

" Parliament has made it the duty of any Local Authority, entrusted with the laws relating to public health and local government, to put in force from time to time, as occasion may arise, the powers with which they are entrusted, so as to secure the proper sanitary condition of all premises within the area under their control, and the Board would point out that a heavy responsibility rests with the local Authorities if they fail to give effect to the intentions of Parliament." The greater, therefore, is the pity, and the greater is the anomaly, that the Local Government Board itself, as the highest Sanitary Authority, does not translate its most excellent intentions into concrete action, and compel the subordinate Authorities to perform their respective duties.

I now reach the end of my observations, which, I fear, have been discursive and somewhat inconsequential. My summing up of the case is as follows: The Housing of the Working Classes Acts, though no doubt not perfect, are still "good enough" for all practical purposes; but the procedure under them is cumbersome, and exceedingly costly, so that large Boroughs do not find them easy of application; and it is really hopeless to expect the small Urban District Council, which has not the money, or the Rural District Council, which does not see the necessity, to put them into action.

The only remedy I can suggest would be the following: Give the Medical Officer of Health security of tenure; let his representation under the Acts be a Special Report, to be communicated to the County Council and Local Government Board; and let one of these bodies be charged with the duty of seeing that the matter is properly taken into consideration by the Local Authority, who should furnish a full report of their decision to the superior Authority, who should then have some power of intervention; but this should be coupled with the duty of sharing in the financial burden, should they insist upon the carrying out of schemes which the minor Authority refused to tackle unaided. In other words, I arrive at the same point to which many previous subjects and discussions have led me: We don't want new Acts, we only want better administration of the Acts we already have; and to get this, the first step is to improve the status of the Medical Officer of Health, who should at least share the conditions of the Medical Officers of the Poor Law service, who, though appointed and paid locally, can only be dismissed for misconduct, and only with the consent of the Local Government Board.

In dragging in this subject, I recognize my likeness to Dickens's "Mr. Dick," so I will conclude by saying, that I hope to extend my own knowledge in listening to the discussion that is to follow.

DISCUSSION.

Dr. Sergeant, in proposing a vote of thanks, said that in almost all big schemes under these Acts considerable delay must be anticipated. He was no partisan of the barrack type of building, for this was usually expensive, not built in a healthy place but in the centre of the town, and not suitable for the people displaced, because of the cost of the rooms. The large landowners were the people to whom they should look chiefly, but he feared that they were largely in the hands of their stewards, and the latter were averse to doing the necessary work. Certainly the landowners should rise to their responsibilities, and provide houses, particularly for those people engaged upon their estates. Wages were at present on the low side, and houses built to let at 5s. per week would probably remain empty so far as the working classes were concerned.

Dr. J. A. Harris said that in his experience landowners were not coming up to expectations. They were ready enough at most times to pull down dilapidated houses, but when the question of rebuilding came up they were very backward. In rural districts the chief difficulty was that the Council, who were to a very large extent farmers, had a horror of any expenditure.

Dr. Meredith Young was of opinion that Section 32 of the Act was practically the only one of any good in rural districts. It was difficult to apply the Housing of the Working Classes Act to rural districts, because it was specially drawn to facilitate alterations in urban districts and large towns. In his opinion more legislation was required of a special kind suitable for rural districts, of the type, for example, of the Public Health Water Act, 1878. The mere adoption *en bloc* of urban sections, such as Sections 47, etc., of the Public Health Act, 1875, was, practically speaking, of little use. He would very much like to see more use made of that Section in the 1890 Housing Act, which enacted that in all lettings of houses of an artisan type a condition was implied on letting, that the houses were in all respects reasonably fit for habitation. He also thought that people should be taught more how to use their houses when they got them, and, instead of setting aside one room out of the four they usually had for pure purposes of ornamentation, they should sink dignity and style a little bit, and use this room sensibly. One of the difficulties connected with the water supply of isolated parts of rural districts was, that even when they had a water main running close to the house they desired to serve, the company, to whom the main belonged, were often unwilling to allow their main to be tapped, because in this case it meant that that length of main was also taxed.

Dr. Garstang, in reply, said that he had derived great benefit from the discussion. In his rural districts individual houses were scattered widely apart, and a group of houses was quite the rarity, hence a public water supply and public scavenging was practically impossible. The fact of estate agents coming on to Rural District Councils in such large numbers boded little good for sanitary progress.

Proportion of the Sexes in the United States.—Statistics of the United States Census Bureau show that there are in the United States 1,638,321 more males than females, the relative excess of males being greater than the average for all countries whose population has been counted with distinction of sex. The cities, however, contain more females than males.

TREATMENT OF DISCHARGES IN SCARLET FEVER PATIENTS.*

By WILLIAM McCALLIN, M.D., D.P.H.,
Assistant Medical Officer of Health for Southampton.

As the treatment of scarlet fever in hospitals seems to be one of the subjects uppermost in the minds of Medical Officers of Health at the present time, I venture to put before you a few facts and comments with regard to one or two points in the treatment of discharges in this disease, as it has been carried out according to Dr. Lauder's plans during the past year in the Isolation Hospital in this Borough.

They refer principally to the care and treatment of the throat and its communications—the primary and chief seat of the disease—which require more special attention than they receive, not only for the benefit of the patient, but also with the object of removing as effectually as possible the source of infection, and consequently reducing the period of isolation.

I may here state that, as far as practical experience in this hospital goes, it may be concluded that the duration of infectivity does not depend, in any degree, on the condition of the skin, that it is not co-extensive with "peeling," and that the state of the throat and its communicating surfaces is the chief if not the only factor in connection with it.

Although I do not intend to discuss "peeling," I may mention that during 1903 and 1904 it has been ignored by Dr. Lauder in determining the duration of detention of patients in hospital. He has published the results of 1903 in proof of his practice. Those of 1904 are equally convincing, since there were but two probable sources of "return cases," in each of which there was a discharge.

As long as peeling is taken as a measure of the duration of infectivity, attention is likely to be devoted to the skin, while the throat is, in many respects, neglected. As the skin passes out of consideration with regard to infectivity, the throat becomes more conspicuous as an object for special attention and treatment; both protective, to guard it from outside infection, and remedial, to remove, as completely as possible, the diseased tissues and with them the source of infection.

First, then, with regard to remedial treatment, which is the one most likely to be carried out, since the structure of the wards in isolation hospitals impedes preventive treatment.

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* Paper read at Southampton before the Southern Branch of the Society of Medical Officers of Health, April 1905.

Being convinced that it should be of an active operative character, Dr. Lauder has freely carried it out, in this manner, to the extent of removing enlarged tonsils and curetting the post-nasal pharynx in cases with nasal, post-nasal, or aural discharges, with the result that the objects aimed at have been accomplished—the patients have been so far benefited, and the duration of infectivity and isolation has been shortened.

It is not suggested that this method of treatment is by any means new, although I am not aware that it is generally practised. It is simply applying to scarlet fever principles of treatment, generally acknowledged to be beneficial and indeed necessary under other circumstances.

It may be said that there are difficulties, liable to make such treatment impracticable. For instance, opposition of parents, the risks of the operation, and the after treatment where there is no medical resident. As a matter of fact, our experience has been that in no case proposed for operation has consent been withheld; the risks of the operation are nil; and the immediate after-treatment consists of doing nothing at all, if possible.

The general method of treating discharging cases during 1904 was a more systematic continuation of that of the previous year. They were separated, either on admission or as soon as the discharges were observed, from non-discharging cases, isolated as far as the available wards permitted, and treated in the usual way by local applications. I may here remark that the use of the syringe for the throat or nose should be avoided in scarlet fever in every stage of the disease.

If, then, the discharge did not clear up, operative treatment was adopted when the throat was free from acute inflammation and convalescence was well established—the average period of the disease being the end of the third or the beginning of the fourth week.

Enlargements of the tonsils were cut off, the post-nasal pharynx curetted, and adenoids, if present, removed.

Following the approved practice, there was no local after-treatment unless the discharge from the throat or nose existed four or five days after the operation, when spraying or douching with an antiseptic was done according to the nature of the case. The ears were, of course, syringed as often as it appeared necessary when discharge from them did not cease immediately after the operation.

Of the 118 cases sent in as scarlet fever, 107 were diagnosed as such in hospital. Of these 22 were operated on with discharges at the time of operation.

In 16, the discharge was observed during the first week of the disease—in 12 of these on admission; in 4 during the second week; and in 2 at later periods of the disease.

The results were as follows:—

In 20 the discharge ceased, and the seat of the operation appeared to be in a healthy state within three weeks.

In 8 it ceased with the operation; in 5 within a week; and in 7 in periods varying from 10 to 19 days.

The average stay of the 20 cases in hospital was 30·4 days. No return cases occurred.

In the two remaining cases, the discharge from the post-nasal pharynx, which existed since admission, continued until they left hospital, one on the 25th and the other on the 15th day after operation, although an aural discharge which developed in hospital had cleared up in each case after the operation.

The effect of this treatment on aural discharges is, I think, both interesting and suggestive. They occurred in half the cases operated on—3 having begun in the first week and 8 after the tenth day of the disease. After the operation they all ceased within three weeks, 5 within 24 hours, 1 in six days, and the remaining five in 13 to 19 days.

It may be said that some of the discharges might have cleared up in time without operation. Of course this possibility cannot be ignored, but the treatment I have briefly described got rid of them speedily and effectually, and with them disappeared one of the most troublesome conditions in the management of scarlet fever patients.

One of the two cases in which operative treatment failed to produce the usual result was probably the source of a "return case." The patient left hospital 15 days after operation, with a slight discharge from the post-nasal pharynx. It is therefore advisable that the very exceptional cases in which discharges do not cease with operative treatment, should not be sent home until they have been isolated as thoroughly as possible, for at least a month after operation.

The success obtained was greater than was expected. A benefit resulted in 20 of the cases: (*a*) to the extent of the operation, as far as the patients were concerned; (*b*) and in the shortened period of detention, as far as the administration was concerned.

By removing the two great sources of chronic cases, namely, peeling and discharges, by ignoring the one and actively removing the other, the average duration of scarlet fever patients admitted during 1904 was cut down to 25·4 days, with at least as small a percentage—1·9—of return cases as occur where peeling is still respected and time is relied on to clear up the discharges.

This must surely appeal to all who are responsible for the administration of isolation hospitals, not merely on account of the financial considerations it suggests, but also by its effect in increasing the utility of such hospitals. The period of detention of patients is fairly definitely fixed, and being short the accumulation of chronic cases is avoided; the hospital is practically increased in capacity for fresh cases, and made more serviceable in the effort to check the spread of the disease.

With regard to preventive treatment, when the state of the throat and the frequent occurrence of discharges of an infective character in scarlet fever are considered, it is difficult to imagine any other condition, medical or surgical, in which it is more essential to avoid segregation of patients. The evil may be lessened by separating cases with infective discharges, as soon as possible, from non-discharging cases, but it is idle to suppose that this is sufficient in scarlet fever, in which there is such a marked susceptibility to septic infection, particularly in the post-nasal pharynx and its communications. Moreover, while the risk of infection in mild cases may be diminished by separating those with infective discharges, the condition of the latter is not improved by warding them together.

It is impossible to keep the source of infection within the four walls of an antiseptic. The nature of the disease seems to require, for proper treatment, isolation of the patients in separate wards. They should not be placed together, as at present in so-called isolation hospitals, in wards constructed for cases of every degree—mild or severe. Of course there are objections to the separate ward treatment, but many of them are so trifling that they are not worth considering.

The chief objection appears to be of a financial character. But it can apply only to the extra structural cost of the wards, which would probably be no more than about 30s. per bed per annum in an ordinary pavilion, a sum scarcely sufficient to be urged as a barrier to a rational method of treatment.

As a set-off to this increased cost, there is the advantage of being able to treat more than one disease in the same pavilion, as in the Pasteur Hospital in Paris, and thereby avoiding at times the cost of heating, lighting, and nursing, in separate pavilions.

When the necessity of real isolation is acknowledged, ways and means will readily suggest themselves for getting over difficulties that, at first sight, may appear formidable. For instance, many of the difficulties likely to be put forward with regard to nursing, could be met by having the ward partitions constructed chiefly of glass.

OPHTHALMIA NEONATORUM has been made notifiable in Austria, and the so-called Credé's preventive treatment with silver nitrate, or preferably protargol, is recommended in all cases in which there is not positive evidence that neither of the parents suffers from gonorrhœa, *i.e.*, that the ophthalmia is not of specific origin.

CO-OPERATIVE DAIRYING IN ENGLAND.*

By H. C. FAIRFAX-CHOLMELEY.

The dairy trade in England is probably on the eve of a revolution. The old methods of marketing the produce of dairy farms appear to have had their day, and the great success of co-operative dairies and cheese factories in other countries, notably in Ireland and Denmark, has caused British farmers, and those who have the interests of British agriculture at heart, to turn their attention to the application of the principle of combination to the industry at home.

It appears probable (whatever may be urged to the contrary) that butter-making has not any great future in this country, for the simple reason that other countries and our own Colonies are able to send us plentiful supplies of butter at a lower price than the British farmer is prepared, or indeed can afford, to take for his own product.

From an examination of the trade done by those co-operative dairies already in existence (a list of which is given) it will be seen that the sale of whole milk and of cream is the most general form of outlet for the produce of the dairies of this country, and in this connection it is interesting to note that one of the largest co-operative dairies at the present time, viz., the Eastern Counties Dairy Farmers' Co-operative Society, deals almost exclusively in whole milk, and that the Skelldale Dairy, which was established in a district which was regarded as purely butter-producing, found it more profitable, after a very short time, to abandon the exclusive tradition, and deal in every other kind of dairy produce.

It will probably simplify the matter if a short account of the actual working of a dairy is given here—most of the co-operative dairies differing little in practice either from one another, or from the ordinary trade concerns. The Skelldale Dairy, near Ripon, may be taken as an example.

The milk is collected under agreement from the farmers in the district, who are bound to strain and cool the milk before placing it in the churns. In some dairies, as at Skelldale, the collection is organized by a system of partial delivery on the part of the farmer, under which a lorry is sent out from the dairy, stopping at various agreed points upon the main road to pick up the churns, the farmer being allowed ½d. per gallon on milk delivered actually at the dairy door—this in itself being an advantage to the farmer, inasmuch as he is able to take up the returned separated milk, or whey (as the case may be), and save a special journey for the purpose. Twopence per gallon is the price paid by the farmer for the separated milk, and this is deducted from the account, which is settled monthly, the amount paid for the whole milk per gallon depending upon an adjustment between the value of the resulting product and the total working expenses.

The ground floor of the dairy at Skelldale is divided into three parts, one of which is built over, the upper portion being really a platform at an elevation, to which ready access is obtained from within the dairy by a flight of steps, and from without by a roadway. And here it may be remarked that, where circumstances permit, the differing levels of the ground should be taken advantage of, and an inclined plane left, or even made, up which carts can go, thus delivering the milk at a convenient level above the floor of the dairy so that the force of gravity is pressed into the service of economical working.

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* Abstract from article in *The Journal of the Board of Agriculture*, Vol. xii., No 4. July, 1905.

The floor at Skelldale is of concrete, and a recess built out of the dairy contains the boiler, which supplies the steam for running the machinery, as well as hot water for cleansing and scalding the bowls and vessels, and for heating purposes in the winter. And for the floor of a dairy, no material should be used except the best Portland cement, since nothing else will stand the incredible wear and tear caused by the rolling of heavy churns, which will quickly wear holes and grooves in the stoutest of floors. A good plan is to mix granite roughly powdered to the size of cowrie shells with the cement. Needless to say that wood or brick, or the pleasant-looking, old-fashioned red tiles, are the worst possible materials for a dairy floor, as they are porous, wear badly and unevenly, and the spaces between either planks, bricks, or tiles, form from the first the most suitable breeding ground for bacteria.

After the milk is unloaded from the carts, it is weighed, and the amount credited to the farmer sending the milk, whose name, to avoid disputes, is usually indelibly stamped upon the churn. Weight is now nearly universally adopted in preference to volume as the method of measurement, both to escape the errors caused by the appearance of froth upon the surface of the milk, and also as a superficial test of quality. A gallon of distilled water at a temperature of 60° F. weighs 10lbs., and a gallon of milk under precisely the same conditions should weigh anything between 10·28 and 10·33lbs., or roughly speaking 10¼lbs. As each lot of milk is weighed by the manager, his assistant empties the churn into a vat made to hold about 230 gallons.

Flowing out of this vat, and controlled by a stop-cock, the milk passes through a smaller vat (which has the effect of steadying the flow), and is then conducted by a pipe to an inverted bell-shaped vessel down the side of which it flows in a thin film. This bell-shaped vessel is heated internally by a steam pipe from the boiler, and the milk is thus raised to a temperature of 90° F. (on the Continent the practice is to heat it much higher), and is then conducted to the separator, the resultant cream being allowed to flow into enamelled pails, which are carried to another part of the dairy, and placed in ripening vessels.

The separated milk, on the other hand, is conducted over a refrigerator, by which it is cooled down to the natural temperature of the water supply, and is received in pails to be weighed, prior to its return to the farmer in proportion to the quantity of whole milk supplied. It is carted away by him, and used for the rearing of calves, pigs, etc., and possibly for use in the household to some extent as well.

To give an idea of the amount of work done at the Skelldale Dairy, a table is given showing the supply of milk dealt with during the years 1892 to 1903 inclusive :—

Year.	Gallons.	Year.	Gallons.	Year.	Gallons.	Year.	Gallons.
1892	102,527	1895	121,069	1898	167.653	1901	198,359
1893	115,181	1896	134,753	1899	185,410	1902	193,559
1894	112,069	1897	148,449	1900	223,110	1903	222,500

In the last year (1903) the members were credited with an average of 7d. per gallon for milk delivered at the dairy (taking milk at 10lb. to the gallon); hence there is no reason for surprise that the dairy has been much appreciated by its members, when it is known that under the old system they would have received fully 1d. per gallon less. Moreover, the presence of so well-equipped a dairy in their midst, governed by themselves, has been the means of stimulating the farmers to pay far greater attention than before, not only to dairying, but to the best methods of conducting their business.

So much then for a large (perhaps the largest) co-operative dairy doing an all-round trade in dairy produce. Some account may now be given of another, mentioned earlier in this article, as doing a trade exclusively in whole milk.

The Eastern Counties Dairy Farmers' Co-operative Society was formed in 1896, for the purpose of marketing the milk and other produce of its members, who number fifty, the nominal capital of the Society being £1,020, of which £520 has been paid up. At present the business, as far as dairy produce is concerned, has been principally confined to dealing in whole milk, though there has also been a small separate trade done in eggs and poultry. The turnover has been steadily increasing. Last year (1904) it amounted to £27,000, and the year before (1903) to £20,000, giving a profit which enabled the Society to pay a dividend of 4 per cent on the capital, besides a bonus of ½ per cent to the members on the total value of the sales during the years, and a bonus of ½ per cent on the purchases of customers having contracts with the Society.

There is no system here of milk collection, the farmer himself effecting delivery at the station in his own cart, and consigning the milk there—either to a dealer with whom the Society has made a contract, or to the Society's representative at Stratford, in East London, or sometimes partly the one and partly the other. By this contract with the Society, the farmer is bound to strain his milk, and cool it down to 60° F. at least before placing it in his churns, a rule which is absolutely necessary for his own ultimate benefit, and one which is fairly strictly observed.

The Society, through its representative at Stratford, makes contracts with the retailers for the regular supply of milk, the members, in their turn, contracting with the Society to furnish a certain quantity daily. The contract is usually a half-yearly one, the "summer-price" being fixed for the period from March 25th to September 29th, and the "winter price" from September 29th to March 25th. The quantity to be supplied is not an absolutely fixed amount, a certain margin (generally about 10 per cent) being allowed. Thus, if a farmer thinks he can supply about 100 gallons daily, he contracts with the Society to supply between 95 and 105 gallons daily. If he then sends less than 95 gallons, and the Society, in order to carry out its contracts, is obliged to purchase milk, the farmer has to pay the difference between the contract price and the market price on the deficit. So that if, in the case supposed above, the farmer only sends 90 gallons, and the Society is obliged to buy five gallons, in order to make up the deficit, at a price ½d. per gallon higher than the contract price, that 2½d. is deducted from the farmer's account. If, on the other hand, the farmer chooses to send more than 105 gallons, he is paid the contract price on 105 gallons, the surplus milk being sold by the Society on his behalf, and the price obtained, whether above or below the contract price, handed to him; although, of course, if the farmer can and does give the Society's representative at Stratford notice beforehand that he is going to send in a larger quantity of milk than he has contracted to supply, the representative may be able to get a price higher than that named in the contract.

Contracts have been entered into with retail traders all over the East of London, and, as far as possible, the milk supplied by the farmers is distributed to the various stations as circumstances require, so as to avoid unnecessary expense in bringing all the milk to a common centre. Thus, if a dealer in Forest Gate required 80 gallons daily, and there is a member under contract with the Society to supply from 95 to 105 gallons daily, such member is instructed to send 80 gallons daily to Forest Gate Station, it being part of his contract that he shall send the milk to whatever station the Society shall require. The remaining 15 to 25 gallons he sends to Stratford Market Station, where it is received by the Society's representative.

If a dealer to whom milk is being directly consigned by a member receives short quantity on any occasion he communicates with the Society's representative at Stratford, who sends him milk to make up the amount contracted for.

Of the milk sent to Stratford, some is distributed by the Society's wholesale van amongst the retail dealers with whom the Society has contracts, and who wish it to be delivered at their own places of business; the surplus is sold in the market either to retail dealers or to other wholesale buyers. The milk is, generally speaking, kept in the churns in which it was consigned by the farmers, but no attempt is made (except in special cases) to keep the various lots separate, and if there are two churns, each half full, the milk is poured from one to the other to save the space and trouble involved by carrying both.

Sometimes, when there is a glut in the market, it is necessary for the Society to hold over milk from one day to the next, and in such a case the milk is taken to the Society's depôt, and pasteurized, or put into cold storage; or it may be sold for separation; or, if the Society happens at the time to have an outlet for cream, it may be put into the hands of a firm with separating plant to be separated for the Society. The Society has recently installed at its depôt refrigerating, cold storage, pasteurizing, and separating plant on up-to-date lines, and will henceforth be able itself to deal with its own surplus milk.

When it is necessary for the Society to purchase milk to make up the amount named in its various contracts, it either purchases from other wholesale dealers, or (if its representative knows in advance of the necessity of buying) telegraphs to one of the many cheese factories which, during the summer, sell their milk whole, provided they are offered a certain price for it.

The onus of cleansing the churns falls upon the retail dealer who receives them, or upon the Society when they have been consigned to the representative at Stratford, after which they are returned to the farmer, who as a rule, supplies the churn in the first instance, though, occasionally, the retail dealer supplies them, and, in one instance, the Society does so.

The increase in the price given for whole milk, owing to the competition introduced into the wholesale trade by this Sociey, is considerable. Milk that formerly would have fetched 1s. 7d. per barn gallon in the winter months, and 1s. 2d. in the summer, now makes as much as 1s. 8d. and 1s. 4d., respectively.

The following is a list of co-operative dairy, milk, butter-making, and cheese-making societies, with the addresses of secretaries:—

*1. Brandsby Dairy and Trading Society, Limited, Yorks.—The Secretary, Brandsby Dairy, Brandsby, Easingwold, Yorks.

*2. Eastern Counties Dairy Farmers' Co-operative Society.—The Secretary, 141, Fenchurch Street, London, E.C.

*3. Lampeter Dairy Society, Limited, Cardiganshire.—Mr. David Thomas, Lampeter Dairy Society, Lampeter, Cardiganshire.
*4. Newark Dairy, Limited, Nottinghamshire.—Mr. W. E. Frost, Long Bennington, near Grantham.
*5. Nidderdale Dairy, Limited.—Mr. E. Moorhouse, 6, Commercial Street, Harrogate, Yorks.
*6. Scalford Dairy, Limited.—Mr. W. H. Harper, The Dairy, Scalford, Leicestershire.
7. Skelldale Dairy, Limited.—The Secretary, Skelldale Dairy, Limited, near Ripon, Yorks.
8. Smeaton Creamery, Limited.—The Secretary, The Creamery, Great Smeaton, Northallerton.
*9. Vicar's Farm, Limited, Worcestershire.—Mr. Forster, Vicar's Farm, Far Forest, Rock, S.O., Worcestershire.
*10. Western Counties Dairy Farmers' Co-operative Association, Limited. —Mr. W. Johnson, 2, Cricklade Street, Swindon, Wiltshire.
*11. Wensleydale Farmers' Association, Limited.—Mr. W. Balderston, Bainbridge, Askrigg, R.S.O., Yorkshire.
*12. Sutcombe and District Agricultural Co-operative Society, Limited.—Mr. O. Greig, Thuboro, Sutcombe, Devonshire.
*13. Claro Dairy Society, Limited.—Mr. Samuel Mills, The Dairy, Arkendale, Yorkshire.
*14. Yorkshire County Dairy Farmers' Society, Limited.—Mr. T. S. Mason, 24, Station Parade, Harrogate.

[Those marked with an asterisk (*) are affiliated to the Agricultural Organization Society.]

The secretaries of these associations would, doubtless, be glad to give further particulars to anyone interested in studying this most important development in greater detail.

MILK OF COWS, GOATS, AND RABBITS, IMMUNIZED AGAINST TUBERCULOSIS.—F. Figari (*Riforma Medica*, xxl., No. 14, April, 1905), found that tuberculosis agglutinins and antitoxins passed into the milk of cows and goats actively immunized against the disease and into the milk of rabbits passively immunized. The kids born of immunized mothers inherit the defensive materials from the mother, and the amounts increase as they continue suckling. Calves and kids born of non-immunized mothers are able to absorb in the digestive tract the agglutinins and antitoxins contained in milk from immunized animals. More than this, these agglutinins and antitoxins are able to excite the formation of other agglutinins and antitoxins. Rabbits passively immunized by subcutaneous injection or by ingestion of the immunized milk, are able to transmit in their milk to their young both agglutinins and antitoxins. Adult rabbits fed on milk from immunized cows absorb in their digestive tract the antitoxins and agglutinins contained in the milk, and their serum is found to have high agglutinating and antitoxic power. He describes his various experiments in detail. The results confirm in every particular Maragliano's assertions in 1903 in regard to the possibility of the passage of the immunizing substances into the milk of immunized animals and their absorption in the digestive tract when fed to other animals, with their subsequent specific action in the organism.

A CONTRIBUTION TO THE STUDY OF THE VITAL AND OTHER STATISTICS OF THE JEWS IN THE UNITED KINGDOM.*

Difficulties attend an inquiry of this nature, because of the absence of any official census of Jews in this country such as are found in most of the countries on the Continent. For statistical purposes a Jew may be defined as one who "when he dies is buried in a Jewish cemetery." This definition would be found to include practically everyone who would popularly be understood to be comprised within this term.

An analysis of the Jewish burials during the years 1899–1903 shows that, when compared with the Jewish population, many abnormalities require to be explained. For example, whereas among Jews 57 per cent of the male deaths occurred at ages less than 5, 42 per cent only in the case of London, and 37 per cent in the case of England and Wales, occurred at similar ages. The same features existed in the female deaths, and also in the deaths of Glasgow, Manchester, and other provincial towns. This high proportion of deaths under 5 might be due to a higher child mortality among Jews than non-Jews, as was, in fact, asserted by a witness who gave evidence before the Aliens Commission. But it might equally well be due to a peculiar distribution of the living Jewish population as regards age and sex. In fact, this high proportion of deaths is subsequently shown to be due to the following causes :—

1. A slightly higher death-rate for children under 5.
2. A considerably lower death-rate for adults.
3. A considerably smaller proportion of elderly Jews—that is, aged 55 and over.
4. A smaller proportion of Jews at the middle ages.
5. A higher Jewish birth-rate.

This abnormal age and sex distribution is primarily due to the influence of the constant stream of immigration from the Continent. This always contains an extremely small proportion of children under 15. Thus the Russians and Russian Poles in this country contain only 135 out of every 1,000 males under 15, the corresponding proportion for England and Wales being 335. This small proportion of children carries with it the correspondingly high proportion of adults between the ages of 15 and 45, and it is shown that whereas the Russian, on arrival in this country, has to provide for an average of 1½ mouths besides his own, the native has to provide for an average addition of 3 mouths. This is a potent factor in mitigating the pressure of the earlier years of his sojourn in this country, and increasing his competitive power in the labour market.

The influence of this immigration is seen most clearly in the age and sex composition of the various districts in the borough of Stepney. Whereas in London as a whole the number of children under 5 is 116 per 1,000 males and 103 per 1,000 females, it rises to 132 and 135 in the borough of Stepney, and to 146 and 150 in St. George-in-the-East.

The method adopted for determining the age and sex composition of the Jewish community consisted in first of all estimating what the total Jewish population was in a district like Stepney; this was found to be

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* Abstract of a paper read before the Royal Statistical Society, June 27th, 1905.

119,800 in 1903. The total population according to the census being 298,600, the difference, amounting to 178,800, represents the number of non-Jews in that borough. This was next distributed at various ages and sexes on the hypothesis that the non-Jewish population of Stepney was exactly similar to the average distribution throughout the four boroughs of Bethnal Green, Shoreditch, Bermondsey, and Southwark. This gave, for example, 11,350 non-Jews as the number of males under 5. The number enumerated at the last census was 19,940, and hence the number of Jews at these ages must have been 8,590. The same process was repeated for each age-group in the census. The total number of Jews in London was estimated to be 144,300 in 1903, indicating that about 80 per cent of the Jewish population resides in Stepney. The Jewish population in Stepney is about 40 per cent of the total population of that borough. This proportion is a maximum at ages 25–35, and a minimum at the highest ages.

A combination of the population and death figures at various ages enables a comparison of the death-rates among Jews and non-Jews to be calculated. The result showed that whereas the death-rate among Jews in 1903 was 15·5 for males and 13·7 for females, the proportion in the case of London was 16·6 and 13·9 respectively. When analysed by ages it was seen that the death-rate for Jewish children under 5 is about 20 per cent higher than in the case of London as a whole. If it had been possible to compare these rates with those for Stepney, where most of them reside, the result would be found more favourable to the Jews. At ages 15–75, the Jewish death-rate is found to be at all ages considerably below that of London. In fact, taking everything into account, it is shown that the expectation of life at birth is for Jews 49 years in the case of males and 52 years in the case of females, as compared with 41 years and 45 years respectively in the case of London on the whole. This difference is maintained at all ages except the highest, when the smallness of the population renders the estimates unreliable.

The Jewish birth-rate is estimated to be at the rate of 45 per 1,000 living as compared with 33½ in the case of London in 1903. The comparison being carried still further to allow for the difference in the proportion of married females at ages 15–45 among Jews and non-Jews, points rather to an appreciably greater fertility of Jewish women.

The proportion of deaths under 1 per 1,000 births—generally known as the "infant mortality"—works out to 128 per 1,000. This is compared with the rate of 165 in the borough of Stepney, and 186 in the borough of Southwark during the years 1896 to 1900.

The marriage-rate is estimated to be 19·2 persons married per 1,000 of the Jewish population, as compared with 17·4 only in the case of London. Allowance being made for the difference in the proportion of males and females aged 15 and upwards, it is shown that of those aged 15 and over 1 in 35 males and 1 in 31 females are married annually among Jews; in London generally the proportions were 1 in 37 males and 1 in 44 females.

The Jewish population of the United Kingdom is calculated to be just under 240,000 in the year 1903. Of this, 140,000 are in the London area, about 67,000 are in the rest of England and Wales, and about 25,000 in Scotland and Ireland. This population is increasing (1) By excess of births over deaths at the rate of about 5,000 per annum; (2) By immigration at the rate of 6,000 per annum.

The following are the principal conclusions reached :—

1. The death-rate from all causes and at all ages, except 0–5, is lower among Jews than non-Jews in London.

2. The birth-rate is considerably higher.
3. The infant death-rate in proportion to number of births is very low.
4. The expectation of life at all ages for both sexes is higher.
5. The marriage-rate is higher.
6. The rate of natural increase is higher.
7. The present Jewish population of the United Kingdom is about 250,000.

HOME WORK ORDER.—In pursuance of the powers conferred on the Home Secretary by Sections 107, 108, and 110 of the Factory and Workshop Act, 1901, he has prepared the following Draft Order:—

I. Section 107 (relating to lists of out-workers) and Section 108 (relating to employment in unwholesome premises) shall apply to the undermentioned classes of work:—

The making, cleaning, washing, altering, ornamenting, finishing, and repairing of wearing apparel and any work incidental thereto;
The making, ornamenting, mending, and finishing of lace and of lace curtains and nets;
Cabinet and furniture making and upholstery work;
The making of electro-plate;
The making of files;
Fur-pulling;
The making of iron and steel cables and chains;
The making of iron and steel anchors and grapnels;
The making of cart gear, including swivels, rings, loops, gear buckles, mullin bits, hooks, and attachments of all kinds;
The making of locks, latches, and keys;
The making of covers for, and the covering, finishing, altering or repairing of, umbrellas, sunshades, parasols, and articles of a similar character, and any work incidental thereto;
The making of paper bags and of paper boxes;
Brushmaking; and
The making of stuffed dolls.

II. Section 110 (relating to the prohibition of home work in places where there is infectious disease) shall apply to the following classes of work.

The making, cleaning, washing, altering, ornamenting, finishing, and repairing of wearing apparel and any work incidental thereto (as in the said section specified);
The making, ornamenting, mending, and finishing of lace and of lace curtains and nets;
Upholstery work;
Fur-pulling;
The making of covers for, and the covering, finishing, altering or repairing of, umbrellas, sunshades, parasols, and articles of a similar character, and any work incidental thereto;
The making of paper bags and of paper boxes;
Brushmaking; and
The making of stuffed dolls.

The lists of out-workers required to be kept by Section 107 is extended to include the classes of work specified under I.

The Home Work Orders of the 11th December, 1901, and of the 14th July, 1902, will be revoked.

DEATH RATES IN RURAL DISTRICTS IN THE COUNTY OF NOTTINGHAM, HIGHER THAN THE URBAN RATES.*

By HENRY HANDFORD, M.D., F.R.C.P., D.P.H.,
Medical Officer to the County Council of Nottinghamshire.

The death-rate for 1903 was the lowest for the past twelve years, which is as far back as I have any records. The rate for England and Wales was also low, namely 15·4. Probably the main cause was a lower infant mortality. This latter was owing to a smaller amount of infantile diarrhœa, consequent upon a cool, wet summer and a smaller amount of infective dust.

By far the most striking feature of this year's mortality statistics is the fact that for the first time the Rural death-rate exceeds the Urban; and this notwithstanding that the infantile deaths (which, as I have already stated, account for more than one-quarter of the total deaths) are much more numerous, proportionally, in the urban than in the rural districts. The altered relative position of the urban and rural death-rates is due mainly to a decrease in the urban rates; the rural rate has only increased 0·3 per 1000. The difference in the age and sex constitution of the rural districts partly explains their higher death-rate; but it is difficult to avoid the conclusion that the urban districts are reaping the advantage of their larger expenditure on measures of water supply and general sanitation. I think the conclusion that will generally be drawn is that sanitary administration has a far greater effect upon the death-rate than the physical condition of the country.

The number of deaths from phthisis, or consumption (that is, tuberculosis of the lungs) was 262, or 0·88 per 1000 of the population. In the urban districts there were 139 deaths, or 0·8 per 1000, and in the rural 123 deaths, or 1·01 per 1000 of the population. The total deaths from *all* tuberculous diseases were 412 for the whole county, or 1·39 per 1000; for the urban districts they were 232, or 1·34 per 1000; and for the rural they were 180, or 1·48 per 1000.

It will thus be seen that in the year 1903 *tuberculosis of the lungs* was more fatal in the rural districts than in the urban; and that "*other tuberculous diseases*" were only very slightly less fatal, the balance in the favour of the rural districts being only 0·07 per 1000. When all tuberculous diseases are taken, the rural districts are 0·14 per 1000 to the bad.

In the past ten years the phthisis death-rate has not been materially influenced by the geological character of the country, indeed the districts most severely affected are of varying geological nature. Conditions of housing and sanitation appear to have been of more importance. During the ten years the urban districts had on the whole suffered more than the rural; but the three large rural districts of Newark, Southwell, and Bingham had a higher phthisis death-rate than ten out of the fifteen urban districts.

In my report for 1902 I wrote: "It is a very striking fact, which has not hitherto received the attention which its importance deserves, that notwithstanding the fresh air of the country, the rural districts show almost as large a mortality from tubercle as the urban districts."

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* From Annual Report.

This has now gone a step further to the disadvantage of the rural districts, and is probably due to the co-operation of many causes. The most tangible are the crowded sleeping rooms and bad ventilation of country cottages, and the large proportion of the twenty-four hours spent indoors by the women and young children, thus to a large extent neutralizing the beneficial effects of pure country air. It is probable, too, that good and nutritious food is more difficult to obtain, but this is a matter less easy of remedy.

The "housing problem" in country districts is too large a question to be discussed here; but probably some improvement would result from the more general adoption of building bye-laws, and their efficient observance. Much more, too, might be done in the ventilation of schools, both for its immediate value to health, and for its instructional value as an object lesson.

AN IMPROVED METHOD OF CALCULATING BIRTH-RATES.—Drs. Arthur Newsholme and T. H. C. Stevenson (*Journal of Hygiene*) refer to the steady declension in the general birth-rate of England and Wales from 36·3 per thousand of population in 1876 to 27·9 in 1904. They propose in the present article: (*a*) To indicate the fallacies underlying the ordinary method of statement of birth-rate; (*b*) To describe an accurate method of stating the birth-rate. They also propose to discuss, in a subsequent paper, the results obtained under (*b*). The errors necessarily present in the computation of the ordinarily expressed *crude birth-rate* are sufficiently obvious, as it neglects the age distribution of child-bearing females. The method suggested is to divide the married females of a community into quinquennial age-periods, and apply to this the "fertility-rate" at each period. This fertility-rate is, of course, much greater in the early stages of the child-bearing period. Unfortunately this rate cannot accurately be stated in this country, as the census returns only give ages in decennial age-periods after the age of 25.

The chief points in the summary are as follows:—

1. The ordinary method of calculating the birth-rate does not distinguish between the influence of fertility and of variations in conditions of the population as to age and marriage.

2. In ascertaining the true meaning of the great reduction of the birth-rate which has occurred in the last twenty-five years, it is necessary to have means for distinguishing between the accidental and the intrinsic causes of change.

3. A step in the right direction is made when the legitimate births are stated in terms of the married women at child-bearing ages, and the illegitimate births in terms of the unmarried women of the same ages.

4. This method fails to correct for the difference of fertility of the various ages comprised in the age-period 15–45.

5. By obtaining corrected fertility-rates, the fertility-rates of different communities can be made directly comparable.

6. In the present paper a method is described of obtaining factors, which, when applied to the readily available crude birth-rates, correct completely both for the varying proportion of married women in compared populations, and for the varying fertility at different periods of married life.

THE EFFECT, AS SHOWN BY STATISTICS, OF BRITISH STATUTORY REGULATIONS DIRECTED TO THE IMPROVEMENT OF THE HYGIENIC CONDITIONS OF INDUSTRIAL OCCUPATIONS.*

HOWARD MEDAL PRIZE ESSAY.

By LEONARD WARD,
H.M. Inspector of Factories.

After a review of the well-known unhealthy conditions and absence of hygienic surroundings attending the employment of adults and children in factories and mines which obtained prior to, and during the early stages of, industrial legislation, the effect of progressive legislation in checking abuses and ameliorating the insanitary conditions was considered, from three different, but closely related, standpoints, viz. the effect on (*a*) the mortality rates, (*b*) the "sickness experience," and (*c*) the physique of the operatives employed in the several typical occupations under review.

In the factories' section, cotton manufacture received most attention, on account of its long established importance and localization, factors facilitating statistical treatment of that industry. The steady improvement which has taken place in the conditions of employment in this important industry during a century of statutory sanitary reform was carefully traced. This was specially shown by the declining death-rates from phthisis and respiratory diseases in certain typical cotton towns. Much of the improvement which was shown to have taken place was undoubtedly due to the enforcement of the hygienic clauses of the more recent Factory Acts, especially the Cotton Cloth Factories Act, 1889.

To a similar cause was attributed the relative decrease in the "sickness experience" of textile operatives in the county of Lancaster.

The figures relating to the physique of textile operatives focussed a new light on the much debated subject of physical deterioration. Comparisons on the bases of weight and height were made between factory children of 1833 and factory children of 1873, and between non-factory children of 1833 and non-factory children of 1873. It was shown that the non-factory child of 1873 had an advantage over the non-factory child of 1833, and this advantage was more marked than the corresponding advantage of the factory child of 1873 over the factory child of the earlier period. Further, it was shown that even the non-factory child was not so well developed as other children living under more favourable conditions (as for instance in the case of the boys at the Friends' School at York). The author therefore concluded that there had been a relative retardation of growth in children employed in textile factories, and that one effect of factory legislation had been to prevent undue deterioration in this class of operative.

The investigation concerning pottery workers showed that up till about 1890 no marked improvement had taken place in the general condition of employment as shown by the vital statistics of such workers. The statistics relating to lead poisoning alone, however, gave irrefutable evidence of the immense benefits accruing to the lead workers in potteries resulting from the working of the hygienic clauses of the obligatory special rules which were introduced subsequent to 1890, and directed at that specific danger.

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* Read before the Royal Statistical Society, May 16th, 1905.

In the sections relating to the white lead and lucifer match industries it was shown that substantial improvement in the shape of less lead and phosphorus poisoning had resulted from the enforcement of special sanitary measures.

Concerning the improved health of coal and ironstone miners the evidence and statistics put forward were even more convincing. Fifty years of statutory regulations were shown to have produced such salutary results that the mortality of coal miners of the present day only slightly exceeds that of agriculturists. The author estimated that more than 15,000 lives had been saved during the last fifty years solely by the prevention of explosions of fire-damp or coal-dust, and that this had been mainly brought about by the provision of "adequate ventilation" as required by the Coal Mines Act of 1855 and subsequent Acts.

In conclusion the author pointed out that with such an immense field he had found it advisable to limit his investigations to some of the more important industries, rather than touch lightly on all the occupations which had gradually been brought under the many and various statutes for regulating the conditions of labour. In addition, time and space did not permit him to make a complete investigation of the whole effects of the statutes concerned.

PHOSPHORUS IN MATCHES.—The International Conference for the Protection of Workmen have agreed upon the following provisions as the basis of an International Convention for the prohibition of the use of white phosphorus:

1. From Jan. 1, 1911, the manufacture, introduction, or sale of matches containing white phosphorus to be forbidden.
2. Notices of ratification to be sent in by December 31, 1907, at the latest.
3. The Japanese Government to be invited to give its adhesion to the present convention before December 31, 1907.
4. The validity of the convention to be conditional on its acceptance by all the States represented at the conference, and by Japan.

INSANITARY PROPERTY AND REHOUSING IN LIVERPOOL.—Mr. Turton, the deputy surveyor of Liverpool, states (*Journal of the Royal Sanitary Institute*, July), that in 1864 it was estimated that no fewer than 22,000 houses in Liverpool were structurally insanitary—that is, they were back to back, without any through ventilation or yard space, and were often situated in courts which had only a tunnel entrance. Many of these houses and courts have been removed under a local Act, which gave to the Corporation of Liverpool extensive powers for dealing with this class of property; but a street-to-street examination in September, 1902, revealed the fact that no fewer than 9,943 houses still remained to be dealt with. Many new buildings have been erected, of which details are here given, and it is estimated that for the costs of demolition and re-erection of proper dwellings no less than £789,000, entailing an annual charge to the rates of £28,639, after allowing for rents, has been already expended. As the new dwellings, which are much sought after, are exclusively reserved for those who have been dispossessed, considerable indignation is often expressed by would-be tenants. The weekly rents vary according to the floor from 5s. 3d. to 4s. 6d. for four-roomed tenements, 4s. 6d. to 4s. for three rooms, and 3s. 6d. to 2s. 9d. for two-roomed tenements.

AN EPIDEMIC OF SORE THROAT.*

By ALEXANDER ROBB, M.A., M.D., D.P.H.,
Medical Officer of Health for Paisley.

In October a peculiar form of sore throat was very prevalent in the town, but the full extent of the prevalence was not known to this department until it was past its height—too late to allow of complete enquiries being made and to enable us to adopt preventive measures. Altogether over 100 cases were known to us, 12 of whom were, throughout the illness, under our own observation. The illness consisted of an acute inflammatory condition of the throat, accompanied by very severe constitutional symptoms (toxæmia), which lasted for from two to four days. It commenced with a feeling of chilliness, pains in the head, back, and limbs, followed by rapid prostration. The tonsils became enlarged, and a distinct white, tenacious, diphtheritic-looking membrane formed on them, and extended sometimes over the uvula and soft palate, and at other times over the back wall of the pharynx. The temperature of the patient was high and the pulse rapid. There was no fatal result, but the patient was often left in a very weak condition. Numerous swabs from the throats of patients were examined bacteriologically, many because the illnesses were suggestive of diphtheria. In no case, however, was the diphtheria bacillus found, but instead an organism known as a diplococcus. Probably this organism was the cause of the illness, but we were unable to fully prove it.

As soon as this department became aware of the epidemic of sore throats, such enquiries as were possible, considering the late period of the epidemic at which we were notified, were made, and it was found that the only common factor amongst the cases known to us was milk supplies. As a result of these enquiries, the Burgh Veterinary Inspector was asked to visit the dairy herds from which the milk was obtained and to examine the cattle, and he reported that many of them had evidently recently suffered from cow-pox—the teats showing remains of the eruption—but had now recovered.

Many epidemics of sore throats have been found to have been caused by milk from cows with teat eruptions—the organism of the eruption easily getting into the milk during milking—and it is probable that the outbreak in question was due to the presence of cow-pox among the cattle from which the milk was obtained.

Separate Collection of Waste Paper.—The custom of collecting waste paper from business premises along with ashes and less bulky refuse is so contrary to all ideas of economical service that it is remarkable it has been allowed to continue. The Bury (Lancashire) corporation, following the example of a few other towns, recently arranged for the distribution to shops and offices in the town, of large bags into which is placed the waste paper of the establishment, the full bags being collected periodically, and exchanged for empty ones. During four months in which the system has been in operation there has been collected paper which realised, when sold, about £30.

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* Annual Report for 1904.

EFFECT OF ALCOHOL ON SCHOOL CHILDREN.*

By T. A. MACNICHOLL, M.D., New York City.

In the course of a study of the relation of heredity to the mental deficiency of children, MacNicholl examined 55,000 school children, 10,800 from country schools and 44,200 from city schools. The 55,000 children, classified according to their standing in studies, appear as follows: Standard, 42 per cent; below standard, 16 per cent; dullards, 17 per cent; very deficient, 25 per cent. Direct causes of dullness reported: Personal habits, 9 per cent; environment, 11 per cent; heredity, 65 per cent; sickness, less than ·03 of 1 per cent. Comparing city and country schools we find a preponderance of deficients in the city. Country schools: Dullards, 15 per cent; very deficient, 7 per cent—a total of deficients in country schools of 22 per cent. City schools: Dullards, 17 per cent plus; very deficient, 29 per cent plus—a total of deficients in city schools of 46 per cent. The personal attitude to alcoholic drinks, including beer, wine, and spirits, is reported in 34,000 cases, viz.: Abstainers, 73 per cent; drinkers of beer, 23 per cent; drinkers of spirits, including wines, 4 per cent; drinkers of beer and spirits, 12 per cent. The parental attitude to alcoholic drinks is reported in 20,147 cases: Children of drinking parents, 6,624; children of abstaining parents, 13,523; children of drinking parents reported dullards, 53 per cent; children of abstaining parents reported dullards, 10 per cent. The following is a summary of the family histories of 3,711 children of 1,100 different families traced through three generations: 1,871 males, 1,840 females; 19 precocious in one or more studies, 421 excellent, 981 fair, 2,290 dullards. The personal attitude to drink: 66 per cent abstainers, 28 per cent beer drinkers, 6 per cent whisky drinkers, 14 per cent beer and spirit drinkers. Family history in relation to drink: 2,713 had drinking parents, 2,771 had drinking grandparents, 2,530 had drinking parents and grandparents, 998 had abstaining parents, 757 had abstaining parents and grandparents. Of the children of drinking parents but abstaining grandparents 73 per cent were dullards; of the children of abstaining parents but drinking grandparents, 78 per cent were dullards; of the children of abstaining parents and abstaining grandparents, 4 per cent were dullards. Dividing the 3,711 children into two classes, viz., those free from hereditary alcoholic taint and those with hereditary alcoholic taint, some very striking contrasts may be noted. (1) Of those free from hereditary alcoholic taint, 96 per cent were proficient, 4 per cent were dullards, 18 per cent suffered from some neurosis or organic disease. (2) Of those with hereditary alcoholic taint, 23 per cent were proficient, 77 per cent were dullards, 30 per cent very deficient, 76 per cent suffered from some neurosis or organic disease. From these studies, MacNicholl concludes: First, alcohol at the threshold of life is a bar to success and a foe to health; second, alcohol, by destroying the integrity of nerve structures and by lowering the standard of organic relations, launches hereditary influences, which by continuous transmission gain momentum and potency, and leave their impact on gland and nerve until the mental faculties are demoralized, physical energies hopelessly impaired, and the moral nature becomes degenerate and dies; third, if we are to make any material change in the ranks of mental deficients, we must adopt methods of prevention as well as methods of cure.

* *Quarterly Journal of Inebriety*, Hartford, Conn., April 1905.

A STUDY OF THE PROCESS OF NITRIFICATION WITH REFERENCE TO THE PURIFICATION OF SEWAGE.*

By HARRIETTE CHICK, D.Sc.

In 1890–2 Winogradsky isolated from surface soil the two organisms which co-operate to produce natural nitrification, the nitrite producer which oxidizes ammonia compounds to the nitrite stage only, and the nitrite producer which finishes the process but cannot act on ammonia, being, indeed, quite inhibited in its development by minutest traces of that substance. The most striking characteristic of these organisms is their repugnance to the presence of organic matter. Not only, in opposition to all the rest of the plant world, do they make no nutritive use of sugars, peptones, etc., but the presence of more than a trace of organic substance entirely inhibits their development.

It appeared, then, unlikely that the organisms which accomplish the oxidation of ammonia to nitric acid in industrial filter-beds, on to which quantities of organic sewage matters are continually poured, should be of the same nature as these isolated by Winogradsky.

A detailed study of this process was therefore undertaken, and chemical and bacteriological investigations of the working of model "contact" and "continuous" sewage-filters were made, both when the filters were mature and during the process of maturation. These researches were carried out in the Institutes of Hygiene in Vienna and Munich.

The model filters, 12 cm. in diameter and 50 to 200 cm. high, were filled with fine coke, and provided with side tubes at various levels, by which liquid from different strata could be drawn off.

The filters were kept working, supplied with liquid manure roughly filtered, for various times up to a year, and tables are given of the significant variations in the composition of the filtrate. The various compounds of nitrogen, free and saline ammonia, albuminoid ammonia, nitrites, nitrates, and total nitrogen were periodically estimated, and the oxidation of other elements than nitrogen (carbon, etc.), was also followed.

The filters, on being started, become spontaneously inoculated, and steadily mature to full efficiency, passing through definite stages more or less sharply separated. At first oxidation of carbon, etc., alone goes on, and ammonia passes through unchanged. In a month, oxidation of ammonia to nitrites begins, and soon becomes complete; then nitrates begin to appear in the effluent. After several months nitrates alone are being discharged.

The distribution of these stages in time is paralleled by their distribution in strata in the continuous filter. The oxidation of carbon almost monopolizes the upper strata, and the oxidation to nitrites and nitrates tends to occur only in the lower strata. The disappearance of ammonia corresponds strictly, both in time and space distribution, with the appearance of oxidized nitrogen. Apparently the abundance of organic matter keeps the nitrifying organisms from invading the upper layers.

Both contact and continuous filters were working more efficiently than they do on the industrial scale; the continuous filters matured quickest and were more efficient, one of only 5-litre capacity oxidized 0·5 gram nitrogen daily. A rise in temperature of a few degrees produces a distinct acceleration of activity; a point that has practical applications.

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* Abstract of a paper read before the Royal Society, May 11, 1905.—*The Chemical News*, xci, 2374.

Much fruitless labour was expended in attempting to isolate, by means of media containing organic matter, the essential organisms acting in these filters. Ultimately they were isolated by Winogradsky's pure saline media, and prove to differ only very slightly from the organisms isolated by him from soil. When this work was drawing to an end, Dr. Schultz-Schultzenstein published the successful isolation of both Winogradsky's organisms from coke filter-beds.

Various possible explanations of how the Winogradsky organisms manage to flourish in filter-beds rich in organic matter are considered.

An interesting symbiotic state was kept in cultivation for some time; this was a union of the nitrate organism with a specific non-nitrifying organism; the presence of the latter enabled the former to develop through several generations in organic media without loss of nitrifying power. When isolated from its consort the former showed the characteristic inhibition by such media.

The current theory of the action of filter-beds holds that ammonia compounds are physically absorbed by the solid porous material and retained until the bacteria have time to nitrify them. A precise investigation of a number of such solid substances was therefore instituted. It failed, however, to reveal any such power of absorbing ammonia salts.

Probably, then, no physical, but only a biological process is at work, and the disappearance of ammonia is directly and only due to its being nitrified as fast as it trickles down the filter. The constant trickling and the perfect aeration of the continuous filter provide very perfect biological conditions for the activity of such an organism. In efficiency the continuous filter surpasses the contact filter, and deserves more extended trial.

EXPERIMENTAL MEASLES.*

By LUDVIG HEKTOEN, M.D., Chicago.

In these experiments special care was taken to exclude natural infection. The blood injected was taken from a boy of 9, who, in the later stages of desquamation after an uncomplicated attack of scarlet fever, developed a rather mild, but typical attack of measles. On the fourth day, 4 cc. of blood were withdrawn from the vein of the right elbow, and two flasks containing 50 cc. of ascites-broth (pepton broth 2 parts; ascitic fluid heated to 55° C., for fifty-four minutes, 1 part) were inoculated at once with 1 and 3 cc. of blood respectively, and placed in the incubator at 37° C. for twenty-four hours. Subcultures made at this time on ascites agar, glycerin agar, and Löffler's serum, kept under aërobic and anaërobic conditions, remained sterile; and the contents of the flask of ascites-broth containing 1 cc. of blood remained permanently sterile. Four cc. of the flask of 50 cc. of ascites-broth mixed with 3 cc. of blood and kept in the incubator at 37° C. for twenty-four hours, were injected under the skin of the chest of a healthy man, 24 years old, just finishing desquamation after an uncomplicated attack of scarlet fever. So far as could be learned, this man had not had any disease at all resembling measles. At no time did any local symptoms appear at the site of injections. On the thirteenth day, the temperature rose to 101°, and on the fourteenth, immediately after taking a warm bath, a red, papular, blotchy eruption broke out on the forehead and spread quite rapidly to the face, neck, and chest. The temperature remained above normal for two days, when it fell to normal about the same time that the unmistakably typical full-grown, rubeolous rash began to fade. An uneventful recovery promptly followed without any complications, the desquamation being branny. During the entire illness there was freedom from respiratory symptoms, and during the pre-eruptive period there were no special local symptoms (*Morbilli sine catarrho*).

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* Abstract of article in the *Journal of Infectious Diseases*, Chicago, March 1, 1905.

In the second experiment the blood was furnished by a girl, 21 years old, who passed through an uncomplicated attack of typical measles. About thirty hours after the earliest appearance of the rash, which still was coming out on the extremities, 10 cc. of blood were withdrawn and distributed equally among four flasks, each containing 50 cc. of broth and 25 cc. of ascites fluid. These flasks all remained perfectly sterile. After twenty-four hours, 5 cc. of the mixture of blood and ascites-broth were injected subcutaneously in the back of a man who had not had measles. He, too, was recovering from a mild attack of scarlet fever. There were no local changes at the site of the injection. On the eleventh day the temperature rose to 99·8° F., and the next day a mild conjunctivitis became definitely apparent. On the thirteenth day there was some cough, the tonsils were bright and red, and there was an increased amount of mucus in the throat. The temperature gradually rose to 103°. During the next night a typical rubeolous eruption came out, the first spots being noticed on the nose, and then on the forehead, face, scalp, chest, back, and abdomen. The forehead was quite uniformly red. Recovery was prompt.

The virus of measles is present in the blood of patients with typical measles, some time at least during the first thirty hours of the eruption, and it retains its virulence for at least twenty-four hours, when such blood is inoculated into ascites-broth and kept at 37° C.

PROPHYLAXIS OF LOBAR PNEUMONIA.*

By J. M. ANDERS, M.D., Philadelphia.

The most efficient prophylaxis for pneumonia must have reference to the accomplishment of four main objects: (1) To overcome individual predisposition. (2) The prompt and thorough disinfection of the sputum and secretions of the upper respiratory tract. (3) Isolation of the patient, especially from the debilitated, and disinfection of the sick room, together with its contents, after death or recovery. (4) The observance of certain public measures. The prevalence of influenza during the last fifteen years has brought about an increased receptivity for and incidence of the pneumococcus infection. Certain degenerative lesions, especially of the cardio-vascular system and the kidneys, have shown increased incidence during the last two decades; and these are found to be associated or antecedent conditions in the majority of cases of pneumonia, hence are probably potent, predisposing factors. The indoor conditions during the cold season favour multiplication and propagation of the pneumococcus, and at the same time tend to diminish resistance to infection by the specific organism. The aged are peculiarly susceptible to pneumococcus infection, hence their bodies should be kept as strong and as healthy as possible, especially during the pneumonia season. To overcome the predominating factors in individual predisposition, special attention must be paid to the subject of ventilation, to appropriate clothing, and to the avoidance of agencies that cause degeneration of the heart, blood-vessels, and kidneys, as alcohol, social excesses, an over-strenuous business or professional life, and the like. The sputum is the principal source of infection, and should be thoroughly disinfected so soon as it is expectorated, and then destroyed by burning. A large proportion of the general populace harbours the pneumococcus in the nasopharynx, and this is especially true in families and in institutions in which cases of pneumonia have occurred; hence thorough cleanliness and systematic disinfection of these chambers should be carried out during the pneumonia season, more particularly in the case of persons more or less exposed to the virus of the disease. Means to prevent dust from accumulating, and its daily removal from the home and the city streets, are imperatively demanded. Public health authorities should be given full executive power to carry out rules and regulations relative to pneumonia, looking to the prevention of its spread, as in the case of other infectious and contagious diseases; they should also carry on a campaign of public education. Measures of prophylaxis must accord with intelligent public opinion before they can be rendered wholly efficient, either by municipal or private authority.

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* Abstract of article in *Medical News*, New York, June 3rd, 1905.

UNIDENTIFIED FORMS OF TROPICAL FEVER.

While the etiology of malaria was obscure and the disease was ascribed to heat, moisture, etc., the occurrence of what were supposed to be irregular and abnormal forms excited no surprise; but now that its nature and causation have been satisfactorily and definitively settled these non-malarial, *i.e.*, not parasitic cases, call for investigation. A Dutch ship's surgeon, Dr. Moritz Silberstein, describes in the *Zeitschrift für Hyg. u. Infectionskrank.* vol. 47, part iii., three outbreaks that occurred on board the same vessel in a voyage from Java homewards, having different clinical symptoms. In the first, which appeared while the vessel was still in the harbour of Tanjong Priok, near Batavia, five of the crew were attacked with febrile symptoms which lasted from 12 to 18 hours, followed by an apyretical interval or remission of two days. On the 4th day there was a sudden rise of temperature, which subsided on the 5th day, ending in a crisis. The attacks did not recur and all the patients recovered. No malarial parasites were found, but it must be admitted that such negative evidence is not conclusive. This form of fever was first described by Van der Schee in 1894. The second outbreak shortly after lasted only twenty-four hours and resembled an abortive form of influenza. There was no eruption, and examination of the blood revealed nothing. In it six other members of the crew were involved. Between two and three weeks after leaving Java a third outbreak occurred, this time among the passengers, and attacked six persons. This was distinguished by an exanthem resembling that of rötheln, but though the interval that had elapsed between the ship's departure from Batavia and the first case would suggest an incubation period, rötheln was unknown in Java, and it certainly was not measles. Blood parasites were sought in vain. These anomalous fevers, the specific and communicable nature of which is indicated by their attacking a plurality of individuals simultaneously, offer a wide field for future investigation.

PRODUCER GAS FOR FUMIGATING SHIPS.*

SUCCESSFUL experiments have recently been made in Hamburg Harbour, by Dr. Nocht and Mr. G. Giemsa, using producer gas instead of pure carbon monoxide. A special apparatus and a floating plant, mounted on a tug, were constructed, and have given entire satisfaction.

The gas is generated by a current of air blown into a producer, where coke is burned. Part of the heat thus produced is utilized in a boiler for raising steam which serves to operate a water pump and a ventilator. The pump supplies any water required for the cleaning and cooling of the gas, while the ventilating fan forces in the air necessary for the combustion of the coke. The whole plant is so designed that it not only introduces the gas it generates into the holds, but removes it after the operation is completed. To effect this, either fresh air is driven into the holds or the foul air is withdrawn from them.

In order to ensure a thorough action, any portions of the holds separated by bulkheads or by horizontal decks should be charged by means of special gas tubes, and for this purpose the ventilators leading into the holds can be utilized. Experiments have been conducted on a number of steamers, mostly belonging to the Hamburg-American Line, both when laden and empty. Conclusive results have been obtained on the steamship Bulgaria, where about 50 live rats were confined in small cages in the hold. After the supply of gas had been maintained for two and a-half to three hours, the ventilating fan was put in motion, and when the holds were again entered all the rats were found to be dead, while samples of different foods had not been affected. Similar results have been obtained in connection with tests on a number of loaded ships, when *post mortem* examination has always shown the cause of the death of the rats to be suffocation by carbon monoxide. In some cases the rats were found to be infected with the plague.

The cost of this process is quite moderate, including as it does only the expenditure for the coke burned and the labour, which, of course, is required with any other process. The prime cost of a large floating plant (which may be mounted on a small vessel) works out at about £2,500. Supposing 100 vessels to be treated by the apparatus in the course of a year, the total cost of treatment, including interest, coke, and labour, will amount to £3 to £4 per ship.

The Municipality of Hamburg has recently subscribed the capital required for the construction of a large apparatus, generating 3,000 cubic metres of gas per hour. The new plant, which is to be mounted on a tug similar to the one referred to above, will likewise contain a complete disinfecting apparatus. Shower baths, and a large Schimmel steam sterilizer (deriving its steam from the boiler of the producer gas plant) will also be included. An apparatus enabling the generator gas to be mixed with formaldehyde vapour, so as to obtain simultaneously a disinfecting action, has likewise been provided. The formaldehyde vapourizer on the Gronwald-Giemsa system can at any moment be readily connected and disconnected, so as to permit of the use of the plant with or without formaldehyde, as the case may require.

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* Extract from article in *Times Engineering Supplement*, June 14th, 1905.

FEMALE SANITARY INSPECTORS.

Dr. F. J. H. Coutts, Medical Officer of Health for Blackpool, has recently tabulated the result of enquiries which he has made from Medical Officers of Health in large towns of England and Wales with respect to the employment of Female Sanitary Inspectors and Health Visitors.

Of the 89 towns from which replies have been received, 45 have either Female Sanitary Inspectors or Health Visitors, or both (of these six call the officers "Health Visitors," but their duties are practically the same as those of a female Sanitary Inspector). In two other towns Health Visitors are appointed and paid by voluntary contributions outside the Corporation. In 42 places there are neither Female Sanitary Inspectors nor Health Visitors, but in Norwich they are just making a new appointment to a vacancy, whilst in Huddersfield they are now appointing two properly qualified Female Sanitary Inspectors. In Southport they have a Female School Attendance Officer who does some work for the Health Department, whilst in Darwen there are a staff of District Nurses (not under the Corporation) doing some of the work of Health Visitors.

Out of the 89 towns, therefore, only 38 are entirely without the work of Female Sanitary Inspectors or Health Visitors.

Of Female Sanitary Inspectors and Health Visitors (employed by Corporations) together, 21 towns have one such officer, twelve towns have two, four towns have three, Newcastle has four, Sheffield has six, Liverpool eight, Salford eight (partly paid by Corporation, partly by Ladies' Health Society), Liverpool has eight (all paid by Corporation), Birmingham has fifteen, and Manchester twenty (of these 18 are Health Visitors—nine paid by the Corporation, and nine by Ladies' Health Society).

In St. Helens a Female Sanitary Inspector was appointed as far back as 1893, and Islington followed suit in 1895; since 1902 many towns have made such appointments.

Salaries vary from £52 a year in Burslem and Ashton-under-Lyne to £170 in Southwark, and £130, rising to £185, in Poplar. The average is about £90 per annum.

Excluding the Metropolitan Boroughs, the commencing salary is about £70 to £75 a year; some start as low as 20s. weekly, and some at 25s., but in several of these cases uniform is provided in addition, or £5 or £10 in lieu of uniform.

In a very large proportion of the towns (37 out of 45), one or more of the Female Sanitary Inspectors or Health Visitors possess some qualification for their work in the form of a certificate from the Sanitary Institute, the Sanitary Inspectors' Examination Board, the Victoria University, or some similar body. In 13 towns one or more of the staff of Lady Inspectors is a trained nurse. In one case the Inspector is a fully qualified lady medical practitioner. In 12 cases there has been some training in midwifery.

In the Metropolitan Boroughs the inspection of Workshops and Factories employing female labour is a principal consideration, while in the provinces the chief duty seems to be the visiting of houses and giving instruction as to keeping the home clean and sanitary, and as to the feeding and rearing of children, in order to prevent the large infant mortality, and particularly the deaths from summer diarrhœa.

In 31 towns the Female Sanitary Inspectors are required to visit and inspect factories and workshops where women and girls are employed; in 30 cases they are expected to visit and make enquiries into infectious or non-infectious diseases (particularly the minor infectious diseases—measles, whooping-cough, and chicken-pox), and to give advice as to nursing, etc.; in 17 cases they have to visit houses where births have occurred; in 32 cases they instruct mothers and nurses in the feeding and care of infants; in 29 they have to make visits to houses in regard to cleanliness, etc.; in 15 they have to make enquiries into deaths (usually diarrhœa deaths); in 4 they make visits under the Shop Hours Act; and in 13, visits under the Midwives Act, 1902. In 4 towns, houses let in lodgings are visited by the Female Inspector, and in two, girls' schools also. In 4 cases visits are made to houses where phthisis exists, and in 11 cases the Inspector is further expected to carry out any other duty required by the Medical Officer of Health.

The following towns have Female Sanitary Inspectors or Health Visitors:—Ashton-under-Lyne, Battersea, Birmingham, Bootle, Bradford, Burnley, Burslem, Bury, Camberwell, Cardiff, Croydon, Derby, Finsbury, Gorton, Hanley, Holborn, Hull, Islington, Lambeth, Leicester, Liverpool, Manchester, Middlesbrough, Newcastle, Norwich, Oldham, Plymouth, Poplar, Portsmouth, Preston (2), Rochdale, Salford, Sheffield, Southwark, St. Helens (2), Stepney, Stockport, Stockton, Sunderland, Swansea, Wandsworth, Warrington, West Ham, Westminster, Willesden, and Woolwich.

Although many Medical Officers of Health who have a Female Sanitary Inspector on their staff feel that the time which has elapsed since the appointment is too short for any beneficial result to be able to be demonstrated statistically, there is a general consensus of opinion that these officers are doing good work, and that the results are noticeable in many cases in improved conditions in factories and workshops, greater cleanliness of homes, improvement in the care and feeding of infants and young children, diminution of overcrowding, whilst in a few instances there seems to be real evidence of a decrease in the general mortality, and especially in the infantile death-rate.

In several towns where no Female Sanitary Inspector has yet been appointed, the matter is already under consideration, or has been advised by the Medical Officer of Health.

THE RELATION OF PRACTITIONERS TO MEDICAL OFFICERS OF HEALTH.

In an address to the North Cumberland Division (British Medical Association), Dr. Roderick Maclaren said, "Can we say that the existing state of matters is quite satisfactory? Thanks to the common-sense and judicious action of medical officers, friction is not of frequent occurrence, but many men feel that the general practitioner as a principal Medical Officer of Health is an anomaly; that he might have a most useful rôle to fill as a deputy or local health officer, but that he cannot be the sole adviser of his board without occasional or even frequent conflict between duty and interest. A complete fulfilment of the work of his office may readily bring him into disagreement with private patients and friends. It is asking a great deal from human nature to expect it always to prefer the public weal to private interest. The weak man may fail to face a disagreeable task; the strong man is tempted to overstrain his authority lest he be suspected of favouritism. In either case a biassed state of mind ensues, detrimental to the best interests of the community. It is also alleged that medical men hesitate to give information readily and freely to one who is their competitor in the struggle for existence; information which would be readily imparted to an absolutely independent Medical Officer of Health. I have certainly often observed the readiness with which practitioners co-operate with the Medical Officer who is debarred from practice. In the presence of infectious disease, or of insanitary conditions, their first thought is to get him in, and the second to help him to the utmost of their ability, whereas with a practising medical officer there is apt to be a reluctance and reticence born of suspicion. It might, therefore, be well that we should, to the best of our ability, promote the formation of sanitary districts of such importance and size as to employ Medical Officers of Health who are independent of practice.

"The usual terms of appointment at present are from year to year; there is no necessary fixity of tenure. At the expiry of the period of appointment a board need not renew it or give a reason for declining to do so, thus placing the medical officer of health at the mercy of a body many of whose members may be personally interested in having his work inefficiently performed. This is a highly unsatisfactory condition, which a Bill promoted by the Association is directed to remedy."

THE INFECTIVITY OF PLAGUE.

In the *Lancet* for June 10, 1905, appears an interesting contribution by Dr. A. M. Elliot, late Special Plague Officer, Bombay Government, whose experience includes some 8000 cases of plague. In a short bacteriological resumé of that disease, he states, as the result of his investigations, that the bacillus is present only in small numbers in the lungs, except, of course, in the pneumonic form. He finds, too, that the bacillus disappears from the buboes as suppuration becomes fully established. These points are of importance as bearing on the relative infectivity of the various types of plague, and support Prof. Simpson's opinion that the bubonic form is but slightly infective. In support of his view that the lymphatic system is always the seat of local reaction from the invading bacillus, Dr. Elliot says that in over 400 necropsies he has invariably found some group of glands infected.

Referring to the transmission of plague to man from domestic animals, Dr. Elliot differs from Prof. Simpson as to the susceptibility of pigeons and fowls, as he has, so far, been unable to effect either experimentally, though his control guinea-pigs have died of plague within the usual period. He gives two instances where he cultivated a bacillus corresponding in every way with that of plague, from cervical buboes in cats which were in association with human cases.

Speculating on the possibility of explaining the recrudescence of plague by a saprophytic existence of the bacillus, Dr. Elliot describes an experiment in which soil from an infected house was kept in a tin-lined box for a month, with precautions against infection. Rats were then introduced, and their food was boiled to prevent infection from that source, but in from three to five weeks all the four rats had died from plague. The experimenter gives this for what it is worth, and it is of interest in that it goes to support the view that infection may be present in the soil, and shows that it may retain its virulence there for seven weeks.

The greater part of the article is devoted to a consideration of the channels of infection, and the writer evidently believes strongly that infection through the skin is relatively very frequent. The greater incidence of inguinal buboes among adult males is attributed to the sitting (or rather squatting) posture of the native, whereby the perinæum and neighbouring parts are kept in a dirty state, and the skin on the inner aspect of the thigh is maintained in a sodden condition. Dr. Elliot considers that women and children squat less often, and that the inguinal glands are less frequently affected on that account. Shaving of the pubes and axillæ in many castes affords opportunity for entrance of the bacillus through cuts. The higher percentage of axillary buboes among women is explained by the proximity of the nipple, and the habit of the women of wiping the hands on their clothing in that region. The high proportion of cervical buboes among children is suggested to be due to their putting everything into the mouth and to dentition.

Dr. Elliot believes that infected food is responsible in some cases, and gives post-mortem evidence in favour of this view in cases where the only symptom was a severe diarrhœa. He regards the higher fatality of certain types and of buboes in certain situations as due to the wider mesh of the lymphatic tissue at the point of entrance of the infective material, whereby the bacillus more readily reaches the blood stream and a septicæmic condition results more rapidly.

Dr. Elliot's further contribution on the modes of transmission from man to man may be looked for with interest.

THE NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND IMPROVEMENT.

The objects of this organization are to stimulate public interest in the physical condition of the people throughout the kingdom; to establish close association and centralization of all societies and individuals engaged in trying to combat such influences as tend to produce national deterioration; to aid existing organizations; and to start organizations for physical health and well-being wherever none exist. The movement is on strictly non-political and undenominational lines. (See Sir Lauder Brunton's paper in the February number of *Public Health*, vol. xvii, p. 274.)

The League took definite shape at a meeting presided over by the Lord Mayor of London on June 28th, when the following resolution was adopted on the motion of the Bishop of Ripon, seconded by the Lord Chief Justice: "That the causes which tend to impair the health of the nation, as disclosed by the report of the Departmental Committee, ought to be combated by united action. It is, therefore, recommended that all the agencies at present engaged in isolated work for that purpose should have the opportunity of combining, and thus cover the whole country."

Sir William Broadbent, speaking on the subject, claimed for his profession that they had been early in the movement. It was entirely through the action of the medical profession that they had that splendid army of public servants, the Medical Officers of Health; and if it had not been for them the population would have been less by hundreds and thousands, and we should have been a great deal further on the road of deterioration.

PERSISTENCE OF PLAGUE BACILLI IN RATS.

The bacilli are not to be detected, at any rate alive, in the excreta of plague rats for more than 2–9 days according to the temperature, and the disease is spread among rats mainly by their devouring the dead and sick of their own number. To determine how long the dead bodies of plague rats remained infective, R. Otto (*Festsch. zum* 60 *geb.*, R. Koch) inoculated guinea-pigs on the abdomen, the skin having been shaved, with cold watery infusion of the organs of dead plague rats, with fatal effects for twenty-four days if the corpses had been kept at a temperature of 22° C., and of sixty days if at one of 6° C. only, while infection followed the ingestion of the diseased organs up to 4 and 6 days only at the same temperatures respectively, which, roughly corresponding to 42° and 72° F., were intended to represent the mean temperatures of summer and winter in the warmer temperate climates which are of the most practical interest to European peoples. In the same volume, W. Kalle concludes that the plague poison is not, like those of diphtheria, tetanus, etc., a secretion of the bacilli or formed by them in and from the surrounding fluids, but is contained in the intracellular substance or bodies of the bacteria, escaping into the blood and juices of the affected animal by the disintegration of the bacilli that goes on through the whole course of the disease, or in like manner in the culture fluids. As yet no anti-body or antidote had been extracted from the bodies of the bacteria, which, like other cultures gave, rise to secondary or derived plague poisons, cadaverin, ptomaïnes, etc.

SANATORIA FOR CONSUMPTIVES.

Royal Commission Suggested.—At the recent Congress of the Royal Institute, Dr. Kelynack in a paper on the subject, said that the treatment of tuberculosis offered one of the most profound and perplexing of modern medico-sociological problems. The so-called sanatorium treatment, which he would prefer to call the hygienic management of consumption, was held to afford the most scientific, rational, and desirable means for coping with a malady which brought personal suffering, domestic disaster, and industrial loss into all ranks of society. It was estimated that 60,000 persons died from tuberculosis every year in England and Wales, and if they valued each life at £300, that gave a total annual loss of £18,000,000. In London' alone the annual death-rate from consumption was nearly 8,000, while about an equal number was lost from other forms of tuberculosis.

There were now some 70 sanatoria in the United Kingdom, with accommodation for 2,760 patients, but the number of free beds was very meagre. Most of the Poor Law infirmaries made no effort to secure anything like adequate sanatorium methods. As regarded the poor sufferers from the disease, both public and philanthropic efforts were merely touching the fringe of the difficulty. Though Dr. Koch's epoch-making discovery of the tubercle bacillus, and the application of scientific and experimental methods of inquiry to the investigation of tuberculosis, had thrown much directing light on the perplexities of the problem, they were still far from anything like a comprehensive knowledge of the pathology of tuberculosis.

Wide differences of opinion prevailed regarding the true nature of tuberculosis as met with in man. They were still in the experimental stage of their research. The sanatorium had undoubtedly come to stay, but the system was in danger of falling into disfavour in consequence of the exaggerated claims of optimists, and in part from the ill-founded charges of ill-informed pessimists. The boom was clearly passing. Anticipations had not been fulfilled. In many instances sanatoria were directed by those who were stimulated by selfish considerations rather than guided by scientific principles. He advocated the necessity for a greater degree of co-operation in the working of existing institutions, and said that the Poor Law would never be able successfully to cope with the problem.

The movement in favour of industrial colonies was in many ways excellent, but it should be clearly understood that such could never be expected to be self-supporting. The Metropolitan Asylums Board had been suggested as the consumptive authority for London. But what was urgently required was some directing and controlling body, which would deal with cases, not in London alone, but throughout the country. Both conscience and intelligence stood in need of enlightenment, and he believed that the time was now ripe for a Governmental enquiry into the methods of dealing with the consumptive poor. He trusted that their deliberations would result in the appointment of a Royal Commission to deal with all aspects of the problem.

TUBERCULOSIS MORTALITY IN PARIS.—Tuberculosis is the cause of between 12,000 and 13,000 deaths per annum in the city of Paris, or about a quarter of the total mortality. Ferdinand Marie-Davy (*Journal d' Hygiene*) reports a study of the subject with special reference to the density of population in the different sections of the city and also with special reference to the ventilation, using the number of doors and windows per each house dweller as an index. The proportion of deaths from tuberculosis ranges from 1·3 per 1,000 in the eighth *arrondissement*, where the proportion of doors and windows is 4·2 for each inhabitant, to 8·2 per 1,000 in the twelfth *arrondissement*, where there are only 1·8 doors and windows per inhabitant. This proportion of doors and windows is in accordance with a certain interior space, and therefore affords an index to the overcrowding of the population as well as to the ventilation.

PHYSICAL DETERIORATION.—A memorial has been addressed to Lord Londonderry, Lord President of the Council, by the Anthropological Institute, and signed by others outside the Institute, including Lord Roberts, Lord Avebury, the Bishops of Wakefield and Ripon, Sir William Ramsay, Sir William Church, Sir Lauder Brunton, which, after approving of the report issued by the Duke of Devonshire's Committee, in which it was recommended that the Government should establish: (1) An anthropometric survey; (2) A register of sickness; and (3) An advisory committee, sets forth the reasons why these proposals should be carried out as follows: (*a*) The measures proposed will enable the Government and the nation to know with certainty whether the physique of the population at large is improving or deteriorating, and, by comparison of the physique with the environment, to ascertain the influences which are bringing about the changes of physique. (*b*) They will supply data to the experts and to the representatives of Government Departments on the advisory committee, which would thus be enabled to arrive at important decisions on which the Government might found legislative action.

SCHOOL HYGIENE.

The Prevention of Infection in Schools.—In a recent report to the Corporation of the City of London, upon the occurrence of cases of infectious disease in one of the County Council schools, the Medical Officer of Health (Dr. W. Collingridge) pointed out what steps should be taken to prevent the spread of infection through the medium of schools. His recommendations have a wider application than to the particular schools to which he intended them to refer, and are of general interest. The staff required for cleansing, he maintains, should be sufficient to secure its being thoroughly carried out. This is essential in all schools, especially where ringworm, favus, and ophthalmia have appeared, the spread of which is affected by the presence of dust. In view of the practical impossibility of preventing the use of towels in common with a large number of children, it is advisable that the lavatories should be locked during such time as there are any cases of these diseases in the school, and any necessary use of such accommodation made only under personal supervision, so as to prevent the spread of infection by towels. In order to minimise the risk of infection by handling books in common, the material should be allotted to individual scholars, and for this purpose each set of books should be enclosed in a separate bag of such material as can be easily and readily cleansed. The expense of this would be small. With a view to minimize the amount of dust in the school, the drilling should be carried on out of doors or in a covered shed, and if at any time this is found to be impracticable, instructions should be given to prevent stamping on the floor during such exercises, as observations have shown that this is productive of dust.

Medical Inspection of Schools.—Reference has frequently been made in Public Health to the question of the medical inspection of public elementary schools.* The Accrington Education Committee have passed a resolution to the effect that in the event of a whole time Medical Officer of Health being appointed for the borough, the Committee would favourably consider the question of paying a part of his salary in consideration of his performing certain duties in connection with the schools. The subject is also referred to by the Medical Officer of Health for Cardiff (Dr. Edward Walford) in his report for 1904. He considers that a routine medical inspection of all the schools in the town should be carried out under the direction of the Education Committee, having in view principally the following objects .—

1. To ascertain and to certify as to the cause of absence from school on account of illness of pupils or teachers.
2. To confer with the head teachers at the schools on the general state of health of the teachers and scholars, and particularly as to the condition of children considered to be physically or mentally weak, and to report to the Committee the result of such conference.
3. To take the necessary steps for excluding from school attendance children suffering from any communicable disease.
4. To examine all children known to have recently been in contact with a person or persons suffering from an infectious disease.
5. To examine and report upon to the Committee the sanitary condition of all schools under their control.

* Public Health, July, 1905, pp. 641, 665.

TUBERCULOUS CHILDREN.—The North Riding Education Committee have decided that medical certificates shall be obtained of children suspected of being consumptive, and that where desirable their names shall be removed from the school register. The Medical Officer of Health will receive particulars of each case.

AT THE meeting of the Urban District Councils Association, a resolution was passed to the effect that in the interests of public health it was desirable that local medical inspectors should be appointed to make periodical visits of inspection of school children attending elementary schools throughout urban areas, so as to enable such officers to obtain early information concerning the presence of infectious disease among school children.

PENCILS AND INFECTION.—The Medical Officer of Health for Festiniog (Dr. Richard Jones) has several times drawn attention to the danger of using wooden pencils or penholders in schools, regarding them as a ready means for the transmission of infectious diseases, and especially of diphtheria. In his report for 1904 he states that in some of the schools in his district writing slates have been replaced by sandboards, which he considers are dangerous substitutes, disease germs finding a resting place in the sand which is stored in the schools. He contends that in infant schools lead pencils, wooden pencil holders, and penholders should be done away with, and that no slates with wooden frames should be used.

LECTURES TO TEACHERS ON HYGIENE.—The Medical Officer to the Manchester Education Committee (Dr. Brown Ritchie) has recently given a series of addresses to the Manchester teachers upon "Infectious disease in school," "Eyesight, hearing and mental peculiarities," and "General Hygiene of schools." The audiences averaged about 500 persons at each address.

THE CHILDREN'S HEALTH.—The Southport Education Committee have appointed a Medical Officer periodically to visit the schools, and to advise and co-operate with the Committee in regard to all questions relating to the health, eyesight, etc., of the children, and the prevention of the spreading of infectious diseases of all kinds.

EMPLOYMENT OF CHILDREN ACT, 1903.—At an enquiry held by Mr. Chester Jones on behalf of the Home Office into the bye-laws proposed by the London County Council, Dr. C. J. Thomas, assistant medical officer of the Education Committee, said that they commenced a general inquiry three or four years ago as to the health of the whole of the children in the London schools, and incidentally the question of the employment of children cropped up. In the 14 schools he visited for the purposes of the inquiry he found that there was 25 per cent of anæmia in the whole of the schoolboys, 34 per cent in boys who were employed up to 20 hours per week, 37 per cent up to 30 hours, and 45 per cent over 30 hours. Deformities, permanent heart signs, and other ailments showed an increased percentage in relation to the number of hours the boys were employed out of school hours. Newsboys working from 20 to 30 hours a week showed a large increase of nerve signs. Heart signs were only shown in those working over 30 hours a week to any extent, and amongst those heart troubles were very frequent. He gave figures showing that 73 per cent of boys employed in barbers' shops were subject to anæmia, which meant that those boys were nearly twice as subject to anæmia as those in any other trade.

VENTILATION OF SCHOOLS AND PUBLIC BUILDINGS.—Mr. J. H. Blizzard urges that the provision of healthy schools in which children should study is the foundation upon which the medical profession should start to prevent the spread of infectious disease. In the elementary schools there should be 250 cubic feet per head for both infant and adult scholars, and the actual interchange should be at least four times per hour. In school designing provision should be made for open-air classes, particularly for delicate children. With regard to public buildings, he is of opinion that churches are the best places for the dissemination of the germs of infectious disease, particularly consumption. There is no ventilation in the average church, and consequently it is an ideal place for infection. The only places properly ventilated are modern theatres. If public authorities would study the hygiene of the up-to-date theatre, and apply it to every public hall and church in their districts, they would confer a boon on suffering humanity, and would also keep the cost down for the maintenance of infectious diseases hospitals and sanatoria for consumptives.

MEDICAL OFFICER FOR EDUCATION.—Sir George Kekewich suggests that the Board of Education should appoint a good medical officer at headquarters, and see that medical officers were appointed by the local authorities to visit every school throughout the country, and report on its sanitary condition and the health of the children. There ought to be a thorough enquiry into the sanitary condition of the schools throughout the country, and they should get rid of those which were in a bad state.

INFANT SCHOLARS.—The York Corporation Health Committee, having been informed of the discretionary powers now granted to Education Authorities by the new Code just issued, with regard to the admission to school of children under the age of five years, passed a resolution expressing the hope that, in view of the extensive prevalence of infectious disease in Infants' Schools in that city during the last few years, and on the grounds of the general health of children of tender age, the Education Committee will in future do their utmost to discourage the attendance of children under the age of five years in all the elementary schools in the city.

SOMERSET COUNTY MEDICAL OFFICER OF HEALTH.—Upon various occasions during the past few years the question of appointing a County Medical Officer of Health has been discussed by the Somerset County Council, and in April last it was resolved, by 31 votes to 27, to make the appointment, at an annual salary of £150, with travelling and other expenses. The gentleman appointed was not expected to devote his whole time to the duties of his office, which were more or less definitely laid down. When, however, at the last meeting of the Council, an Officer was about to be elected from the candidates who had sent in applications in response to the Council's advertisement, a resolution was carried, by 32 votes to 31, which had the effect of rescinding the April resolution, so that the Sanitary Committee of the Council are still in the invidious position of having to make recommendations without being able to support them by the opinion of a technical adviser. One regrettable result of this undignified action of the County Council was the resignation from the Sanitary Committee of Mr. A. F. Somerville, who, as its chairman, has been a staunch advocate of the appointment of a Medical Officer of Health.

LAW REPORTS.

HIGH COURT OF JUSTICE.

CHANCERY DIVISION.

May 16*th*-18*th*, 23*rd*-25*th*, 30*th*-31*st*, *June* 1*st*,
July 11*th*, 12*th*, *and* 29*th*, 1905.
Before Kekewich, J.

ATTORNEY-GENERAL *v.* CORPORATION OF DORCHESTER.

Public Health Act, 1875, *ss.* 17, 27. Pollution by Sewage—Nuisance—Sewage Works—Injunction.

A local authority in constructing and maintaining sewage works are not authorised thereby to cause a nuisance, even although such works have been constructed under a Provisional Order granted by the Local Government Board, and are carried on without negligence. An injunction will be granted to restrain them from causing such nuisance. They will also be restrained at the instance of the Attorney-General from sending unpurified sewage into a river, although no injury is feared.

This was an action by the Attorney-General at the relation of Mr. Talbot, and also by Mr. Talbot as co-plaintiff, for an injunction to restrain the defendants from carrying on certain works for the treatment and disposal of the sewage of the borough of Dorchester so as to cause a nuisance by smell; and further, for an injunction based upon Section 17 of the Public Health Act, 1875, to restrain them from conveying sewage and filthy water from their sewage works into the river Frome, before such sewage and filthy water had been freed from excrementitious and other foul and noxious matter affecting the purity of the water in the river.

The defendant's sewage works were in the immediate neighbourhood of Mr. Talbot's house.

Pressure had for many years past been put upon the defendants by the Local Government Board to compel them to establish a new and extended drainage system for the borough; and ultimately by the Dorchester Order, 1900, confirmed by the Local Government Board's Provisional Orders Confirmation (No. 9) Act, 1900, provision was made for the extension of the boundaries of the borough, and by Article 21 the defendant Corporation were required within six months after the commencement of the order to proceed to carry out works for the disposal of the sewage of the borough approved by the Local Government Board. It was these works which were complained of in the action. The defendants' case was that these works had been executed, and were being maintained by them under the express directions of the order, duly confirmed by statute, and without any negligence on their part, and that the nuisance (if any) caused thereby was inseparable from the construction and maintenance of the works, and was only occasional and temporary. They further contended that, as regards the treatment of the sewage, that was not an aggravation but a mitigation of the nuisance (if any) caused by the old system under which the sewage was discharged direct into the river Frome.

MacMorran, *K.C.*, *P. Ogden Lawrence*, *K.C.*, *Clavell Salter*, *K.C.*, and *Longstaffe* appeared for the plaintiffs; and *Danckwerts*, *K.C.*, *Stewart Smith*, *K.C.*, and *Sargant* for the defendants.

Kekewich, J., found as a fact that the works of the defendants occasioned both a public and a private nuisance, but that as regards the sewage discharged into the river Frome the plaintiff had no longer cause of complaint. In the course of his judgment he said that the defendants are a sanitary authority, having all the powers conferred on such an authority by the Public Health Act, 1875, but acting subject to the limitations and restrictions imposed by that Act. These limitations and restrictions are for the most part concerned with the construction of works beyond the borough, the acquisition of land, and the power of borrowing money. There is, however, one restriction which must be carefully noticed. Section 27 of the Act enables them to construct any works within their district, or subject to the provisions of the Act, without their district, but provides that as regards this power and other powers given by the same section, no nuisance shall be created by the exercise of them. If, therefore, the defendants purport to exercise a power given by the Act, they cannot plead immunity from an action for nuisance on the ground that such nuisance is authorized by statute, for it is in express terms plainly prohibited. It really was not contended that down to the year 1900 anything had been done to interfere with this prohibition. The Local Government Board had sanctioned the defendants' purchase of land for the purpose of sewage works, they had approved plans of the works according to a particular scheme, and later, the substitution of an entirely different scheme, and further, they had sanctioned the borrowing of money for the purpose of enabling the works to be constructed, but they at no time and in no manner purported to do more than to enable the defendants, by means of their sanction, to exercise the powers conferred on them by the Act of 1875, in the manner and to the extent not permissible without such sanction. The fact that the Provisional Order and the Act of Parliament confirming it form part of the machinery of this sanction did not in the slightest degree affect the situation. But in 1900 something different occurred, and this is the turning point of the defendants' case. They were then endeavouring to enlarge the limits of the borough, and the aid of the Local Government Board being required, that Board took advantage of the opportunity to insist on their making the much-needed and long-delayed provision for disposal of sewage. By Article 21 of the provisional order of that year, which was confirmed by the Act of Parliament, it was provided that it should be the duty of the corporation within six months after the commencement of that order to proceed to carry out and execute works for the disposal of sewage of the borough approved by the Local Government Board. They say that they were under an obligation to submit plans for the approval of the Local Government Board, and that, having obtained such approval, they were under the further obligation to execute works according to the plans so approved. I do not so read the article. In my judgment the true meaning of it is that they were bound to carry out and execute works for the disposal of the sewage of the borough, and that here the statutory obligation ceased. No doubt they would not have performed their obligation to execute works if these works were not approved by the Board, but that is only a condition of the efficiency of the works. The test whether they had properly done what they were ordered to do is not by itself part of the obligation imposed. The statutory obligation is to carry out and execute works for the disposal of sewage, and no more. Read in this way, the article really means that the defendants shall within the time limited exercise the powers conferred on them by the Act of 1875; and the approval of the Local Government Board is merely an incident to such exercise; it in no wise removes the prohibition not to create a nuisance.

The question arising under the 17th Section of the Public Health Act, 1875, must be treated separately. The defendants' view is that this provision is only intended to interfere with the right which the local authority would otherwise have had to do what is here prohibited. It cannot be suggested that any private right of Mr. Talbot is violated, and Mr. Talbot has no right of action. But it is further said on behalf of the defendants that this statutory provision is not a matter which concerns the public at all, and that therefore the Attorney-General equally has no right of action. If it is a matter which does not concern the public, the Attorney-General cannot sue; but there, I think, the defendants' case breaks down. It is not for the Court to inquire why it seemed good to the Legislature to forbid a local authority to make or use any sewer, drain, or outfall for the purpose of conveying sewage or filthy water into any natural stream or watercourse without the purification mentioned in the section; but, in providing that nothing in the Act should authorize that which would have been otherwise permissible, the Legislature seems to me to have distinctly forbidden it, and it must, I think, be concluded that it was forbidden on public grounds. If the Attorney-General is entitled to sue, it is not incumbent upon him to allege or prove injury. Disobedience to the statutory provision is enough to maintain the action. His lordship accordingly declared that at the date of the writ there were both a public and a private nuisance by smell, and a breach of Section 17 of the Public Health Act, 1875, but that this last-named breach did not continue, and granted injunctions to restrain the defendants from carrying on their works so as to be a public nuisance to the inhabitants of the borough, or a private nuisance to the plaintiff. There must also be an inquiry as to damages. The operation of the injunctions would be suspended till January 11th, 1906. The defendants were ordered to pay the costs of the action.

SECURITY OF TENURE.—The *Public Health Engineer* (June 24th) writes: If public health administration is to be fearless and efficient some measure of protection for the officials who are responsible for it seems absolutely necessary; but we have before now had occasion to maintain that it is as necessary in the case of the municipal engineer as either the Medical Officer of Health or the Sanitary Inspector, especially as the engineer and surveyor have the responsibility of administering the building bye-laws. The council of the Incorporated Association of Municipal and County Engineers wisely decided that success was more likely to be obtained in conjunction with the other classes of officers referred to, than by separate action, and they accordingly approached the promoting bodies with a view to obtaining the inclusion of municipal engineers in the scope of the Bill. There is nothing to indicate how these advances were received, but the fact remains that the Public Health Bill, as it is described, has not gone beyond the first reading, and has been withdrawn. The council are in certain quarters periodically taunted with the fact that they do not by some mysterious means bring some extraordinary pressure to bear on the Local Government Board, introduce a Bill into Parliament, obtain every facility for it, and rush it through in the course of a single session. The fact that a Bill supported by the combined influence of the medical profession of the country has failed to get beyond its first reading should give pause to some of the carping critics who have so much fault to find with the council.

REVIEWS.

Natural Science in Hygiene, or the Life History of the Non-Bacterial Parasites Affecting Man: For the Use of Students of Public Health. By James Rodger Watson, M.A., B.Sc., M.D. Pp. 62. Price 1s. 6d. net. Bristol: John Wright & Co. 1905.

Except for the diagrammatic life cycles of the various parasites, we do not find much that the public health student cannot get as well in the ordinary manuals. Probably the little book would be of greater value to the ordinary medical student.

The Care of the Skin and Hair. By James Startin, M.R.C.S., Senior Surgeon and Lecturer to the London Skin Hospital, Fitzroy Square. Pp. 88. Price 2s. 6d. net. Bristol: John Wright & Co.

This work has been compiled from lectures and papers which Mr. Startin has read during the last few years, and contains suggestions as to diet, clothing, bathing, and cosmetics. It is written in a popular style, and is intended for the general reader rather than for the profession. Both style and matter are excellent, and Mr. Startin has not fallen into the mistakes which popular writers sometimes do, namely of giving instructions and prescriptions for treatment, and he wisely utters a word of warning to obtain proper advice before using the many articles advertised and recommended now-a-days for improving the hair and the complexion.

Pocket Handbook for Monthly Nurses. By Margaret Chenery. Price 1s. London: Simpkin & Co., Ltd.

This is a convenient little book, likely to be useful to young beginners as well as to older nurses who have not had the privileges of a modern training.

The Food Inspector's Handbook. By Francis Vacher, Medical Officer of Health for Cheshire. 4th Edition. Illustrated. Pp. 223. Price 3s. 6d. net. London: The Sanitary Publishing Company. 1905.

Owing to the addition of a new chapter on Statutory Powers, the size of this *Handbook* has been somewhat enlarged. It has been carefully revised, and will, doubtless, continue to be the trustworthy guide it has been in the past for those engaged in food inspection.

Health in Infancy. By T. M. Allison, M.D., Hon. Physician to the Hospital for Women, Newcastle-on-Tyne. Pp. 41. Illustrated. Price 1s. Newcastle-on-Tyne: T. and G. Allan, Blackett Street. 1904.

How to Manage a Baby. By Mrs. Frank Stephens. Revised by W. Collingridge, M.A., M.D., D.P.H., M.O.H. for the City of London. Pp. 34. Price One Penny. London: Horace Marshall & Son.

The subject of infant mortality and infant management is now being recognized as one which has been too long neglected, and we welcome any writings which will help to bring the importance of it home to the mothers and young women of this country. The difficulty, however, is to get the working-class mother to study any pamphlet longer than a page or two. Both those now under consideration are excellent, and are likely to be of great use to Health Visitors, District and other workers. Dr. Allison's book is especially interesting, being pithily expressed, and comparisons of types of feeding are illustrated by photographs from the nursery and the farmyard. We understand it has been supplied to the staff of the Public Health Departments of Newcastle, Leeds, Huddersfield, Bury, etc.

HOW TO KEEP "FIT," OR THE SAILOR'S GUIDE TO HEALTH IN ALL PARTS OF THE WORLD. Compiled by Fleet-Surgeon W. G. Barnes, M.D. Pp. 37. Price 3d. London: Gale & Polden.

No one more than the sailor requires information how to keep fit, and this little book gives it in practical shape.

APPENDIX TO SQUIRE'S POCKET COMPANION TO THE BRITISH PHARMACOPŒIA. 60 pp. 1905.

This is Messrs. Squire's half-yearly Addendum, bringing the well-known "*Pocket Companion*" up-to-date. It contains a useful summary of the references to medical literature during the latter part of 1904 and the first portion of 1905.

A MANUAL OF CLINICAL CHEMISTRY, MICROSCOPY, AND BACTERIOLOGY. By Dr. M. Klopstock and Dr. A. Kowarsky, of the Institut für Medizinische Diagnostik, Berlin. Translated by Thew Wright, M.D. Pp. 296, illustrated and with 78 coloured plates. Price 8s. net. London: Rebman, Limited, 1905.

In the preface to the German edition of this work the authors state that their endeavour is to place a concise manual for laboratory purposes in the hands of the practitioner, and a perusal of the book convinces us that the attempt has been a highly successful one. This is not merely a catalogue of methods, or a compilation from other sources, but bears strongly the impress of the practical familiarity of the authors with their subject. An additional advantage with regard to this, the first English edition, is that the translator is well acquainted with the methods of the authors from his own work in their laboratories.

The different secretions and excretions, the blood, fluids obtained by puncture, and diseases of the skin, are successively dealt with. The general characteristics, normal and abnormal, the methods of collection and of chemical, microscopic, and bacteriological examination applicable to each are described concisely but fully, pathological significance being also alluded to. Special prominence is given to examination of the urine. The methods described by the authors throughout are numerous, in fact a very large amount of information is contained in the handy laboratory form in which the volume is issued. The final chapter is devoted to methods of staining, formulæ of stains, and the preparation of media. The numerous illustrations of apparatus and microscopic appearances are well executed, the print is clear, and the publisher's portion of the work generally is highly satisfactory. We do not think that Messrs Rebman will have occasion to regret the publication of this very useful volume.

INSTRUCTIONS TO MIDWIVES. The Midwives Supervising Committee of Manchester have drawn up and issued in book form to all midwives practising within their area, a series of instructions which are to be highly commended. They are short and concise but clearly expressed, and for women who have had any training they should be extremely useful. It would be well if similar sets of instructions were issued by all Committees.

VENTILATION.—In connection with the fifth Congress of Experts in Heating and Ventilation, which took place in July, at Hamburg, a special number of the *Gesundheits-Ingenieur* has been issued. A series of articles have been contributed by some of the most prominent authorities on the various sections of the subject. Thus Professor Rietschel treats of the resistance offered in channels, to the movement of air-currents, with many tables of experiments and graphic diagrams. A very full account, with numerous illustrations, follows, of the heating, ventilation, and hot water supply in the Grand Hotel at St. Moritz.

CORRESPONDENCE.

THE EPIDEMIOLOGY AND THE PREVENTION OF SUMMER DIARRHŒA.

To the Editor of "Public Health."

Sir,

I am glad to find in an article in the August number of *Public Health*, on "The Influence of Privy Middens and Water Closets in Diarrhœa and Typhoid," by Mr. A. W. Martin, that the writer has, since 1898, noted the intimate association between the advent of flies and the prevalence of diarrhœa in epidemic form.

The facts stated in this contribution form a very important buttress to the theory I ventured to advance at a conference of Medical Officers of Health, in Essex, in November, 1902 (see the *Lancet*, January 31st, 1903), and again before the Epidemiological Society of London in 1903 (Trans. Epidem. Soc., N.S., vol. xxii. 1902–3), that if instead of Ballard's "micro-organism" we substitute an "organism," whose "manifestations are dependent upon conditions of season," we shall be nearer the truth.

I showed how the average diarrhœa curve for London (which I selected and worked out as being of sufficient magnitude to base deductions upon), is in close agreement with the life-history of "Musca Domestica."

My extended observations since that date have confirmed me yet more in the adequacy of my theory that "the house fly is the most active pathogenic agent during the summer and early autumn, and is incidentally the principal factor in the spread and origin of epidemic summer diarrhœa."

I am gratified to find that in the current number of the *Journal of Preventive Medicine*, Professor Hewlett lends the support of his authority to this theory, at any rate to the extent that "A strong case has been made out against the house fly as a potent carrier of infection." (*The Ætiology of Epidemic Diarrhœa*, p. 507).

I do not accept the theory that there is one specific micro-organism as the causal agent of epidemic diarrhœa. Diarrhœa is but a symptom, and may be induced by various bacteria. In any one particular epidemic in any one particular area, however, the probabilities are in favour of one particular pathogenic organism being carried by flies in the majority of the cases which occur in that particular outbreak.

I am, Sir, yours faithfully,

August 22nd, 1905.

J. T. C. NASH, M.D.,
M.O.H., Southend-on-Sea.

DEATH CERTIFICATION.

To the Editor of "Public Health."

Sir,

I do not doubt that many medical officers of health are repeatedly annoyed when making out their reports, by the very careless manner in which certificates of death are frequently filled up.

Looking over my register I find several instances in which the cause of death is returned as "cardiac failure," "senility" (where the age is under 70 years), "marasmus," etc., and consequently I am at a loss how to classify such cases.

If the Registrar-General were to issue a small guide to Registrars, showing them how to discriminate between symptom and cause, and if when the former only is inserted, the Registrar could be empowered to refer the certificate for amendment, it would be of great assistance.

I am, etc.,

Public Health Office, Jno. W. Hayward.
Whitstable, *July 24th*, 1905.

NUISANCE FROM GAS-PRODUCING PLANT.

To the Editor of "Public Health."

Sir,

There has recently been erected in my district a gas-producing plant (Crossley's Pressure) for driving the machinery of a factory. There was very serious nuisance at the first installation, but this was owing to remedial errors which were overcome. But there has been since a more or less continuous nuisance, sufficient to cause serious inconvenience to residents in the neighbourhood. The gas is produced by passing air and steam over incandescent anthracite.

I am informed that the gas which escapes for the first few minutes after starting the plant is non-inflammable and that, consequently, the nuisance arising from this cannot be prevented? The smell is most objectionable. Can you inform me if such is the case, or whether it is possible to run one of these plants without any discharge of foul gases into the air?

J. P.

Milk Supply and Scarlet Fever.—At a recent meeting of the Cambridge Town Council, Dr. Anningson presented a report on an outbreak of scarlet-fever which invaded the borough, and also the adjacent Chesterton urban and rural districts. Altogether, 78 cases were notified, 56 of which occurred in Cambridge, many of them being students. The milk supply was found to be mainly responsible for the outbreak. Although the Cambridge dairy from which the milk was supplied was in a perfect condition, it was found that the dairyman had purchased a supplementary supply from a milk purveyor in the country, who was not a cowkeeper, but obtained his supply for distribution from 15 different sources. The medical officer found that at one particular place, a man who had been employed in milking, had hands and feet "consistent with the later stage of a scarlatinal attack." His child also gave similar indications. They had visited relatives at a village in the county where it was stated that scarlet fever had been present, six or eight weeks previously. On Dr. Anningson's representation, the Cambridge dairyman at once gave up the distribution of any milk other than that of his own cows, and from that time no cases attributable to his milk supply had occurred.

PROCEEDINGS OF THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTITUTED 1888. INCORPORATED, 1891.

North-Western Branch.—An ordinary meeting was held at the Chemical Club on Friday, the 16th June. Present: Dr. J. B. Wilkinson, President (in the Chair), Drs. Garstang, Hayward, Sergeant, J. A. Harris, and Meredith Young, with Dr. James Howard as a visitor.

Certain matters in connection with the Annual Provincial Meeting were discussed. It was decided to ask as guests of the Branch, at the Annual Provincial Meeting, Sir J. T. Herbert, K.C.B., Professor Boyce, Dr. Sephton, and Mr. Helme, M.P.

DR. GARSTANG then read a paper on "The Application of the Housing of the Working Classes Acts in Rural Districts." (*See* p. 747).

Northern Branch.—A Meeting of the Branch was held in the Council Chamber, Hexham, on the 23rd June, the following members being present: Drs. Jackson, Dey, Mostyn, Smith, Renney, and Taylor, and (visitors), Dr. Boustead, Councillor Alexander, and Alderman Stainthorpe.

Dr. T. E. Hill was re-elected president for the session 1905–1906.

Drs. Hembrough and Taylor were elected representatives of the Branch, on the Council of the Incorporated Society.

The Branch subsequently visited the Public Slaughter House, the Isolation Hospital, Sewage Disposal Works (under construction), and other places of interest in the vicinity.

The next meeting of the Branch will be held on the 27th October, at Newcastle-on-Tyne, when a paper by Dr. Armstrong, Medical Officer of Health, Newcastle-on-Tyne, will be read, entitled: "Methods of dealing with Laundries in case of infectious disease amongst their employés or customers."

Southern Branch.—A meeting was held at the East Sussex County Asylum, Hellingly, on July 21st, 1905. Present: Drs. Norman, Steinhaeuser, Milburn, and Griffith.

The accounts for the year were presented, and passed, showing a gain of £4 for the year. It was agreed to make a donation of £5 towards the maintenance of the library at the Society's headquarters.

A resolution from the Midland Branch referring to the Editorial in *Public Health* for June, was considered: it was decided to take no action respecting it.

The following officers for the Branch were elected for the year 1905–6: President: Dr. C. H. W. Parkinson; Representatives to Council: Dr. Lockhart Stephens, Dr. W. G. Willoughby. Hon. Treasurer: Dr. H. Stott. Hon. Secretary: Dr. A. Griffith.

The members were entertained at lunch by Alderman Eager, J.P., Chairman of the Asylum Committee, and Dr. Taylor, Medical Superintendent, who afterwards conducted them over the buildings and grounds.

Metropolitan Branch.—A meeting was held on the 24th July, at the Offices of the Society. The following Annual Report was submitted and adopted:—

Your Council report that important work has been carried out during the past year (1904-5) by the Metropolitan Branch of the Incorporated Society of Medical Officers of Health, under the Presidency of Dr. H. W. Roberts. The Branch has held four meetings, and the Council seven.

The details may be summarized as follows:—

(1) *Branch's New Premises.*—The Branch has arranged to hold, and is now holding, its meetings at the Society's new premises, 1, Upper Montague Street, Russell Square, W.C., paying an annual (inclusive) rent of £10 for the use of the necessary rooms.

(2) *Sir Shirley F. Murphy.*—A letter of congratulation was sent by the Branch to Sir Shirley F. Murphy, as Past-President of the Branch, on the occasion of his being knighted, recording also the Branch's great gratification at the distinguished honour conferred by His Gracious Majesty the King.

(3) *Annual Dinner.*—The Annual Dinner (to which ladies were invited) of the Branch was held at the Holborn Restaurant on January 27th, 1905—88 members (and their friends) being present. Sir Shirley F. and Lady Murphy were entertained by the Branch as the guests of the evening.

(4) *Shop Hours Act*, 1904.—The Branch has approved the principle of all officers (appointed under the Shop Hours Act, 1904) being connected with the Public Health Departments of Sanitary Authorities, and acting under the supervision and instructions of the Medical Officers of Health.

(5) *Metropolitan Asylums Board and the Discharge of Patients from Fever Hospitals.*—The Branch has decided in favour of the continuance of the Metropolitan Asylums Board's arrangement, by which, since February, 1903, the Metropolitan Medical Officers of Health have been furnished with duplicates of the notices of the proposed discharges of fever patients from hospitals to their homes.

(6) *New Bye-Laws as to Offensive Trades.*—The suggested new and amended Bye-Laws of the London County Council, *re* Offensive Trades, have been approved by the Branch.

(7) *Revenue Act*, 1903.—An important paper was read by Dr. Sykes, Medical Officer of Health, St. Pancras, and President of the Society, giving the history of the different Revenue Acts that have been passed—in so far as such Acts deal with the certification by Medical Officers of Health of tenement houses separately occupied, and pointing out the need for uniformity of action amongst Medical Officers of Health in the Metropolis in connection with the granting of such certificates.

The Branch finally approved a series of minimum requirements as necessary before any certificate as to accommodation and sanitary conditions should be issued under Section 11 of the new Revenue Act, 1903, such requirements dealing with (*a*) the separate rooms; (*b*) the dwelling as a whole; (*c*) the house; and (*d*) the premises.

The Branch has also made a representation to the Local Government Board, urging that is desirable that the plans of new buildings intended to be constructed for occupation in separate dwellings, at rentals within the limits of Section 11 of the Revenue Act, 1903, shall be submitted to the Medical Officers of Health before the buildings are erected, in order to avoid subjecting the owners to the risk of a refusal of certificates, by waiting until after the completion of such buildings.

(8) *Sanatoria for Metropolitan Consumptives.*—The Branch has again, during 1904-5, taken up the subject of the establishment of sanatoria for consumptives for the Metropolis. An influential Deputation was organized by the Branch, and waited upon the Metropolitan Asylums Board on April 15, 1905, representing the desirability of the Board undertaking

the duty of Sanatorium-Authority for the Metropolis at the earliest possible date. The following Bodies joined with the Branch in forming the Deputation :—

(*a*) National Association for the Prevention of Consumption and other Forms of Tuberculosis; (*b*) Royal Institute of Public Health; (*c*) National Health Society; (*d*) Royal Sanitary Institute; and (*e*) Metropolitan Hospital (Saturday and Sunday) Funds.

Dr. T. O. Dudfield spoke on behalf of the Branch; Sir Wm. Broadbent, Bart., for the National Association; Mr. W. G. Bunn, for the Metropolitan Hospital Saturday Fund; and Sir Edmund Hay Currie for the Metropolitan Hospital Sunday Fund.

(9) *London County Council* (*General Powers*) *Bill*, 1905.—This Bill was carefully considered by the Branch, and it was decided to oppose it, in so far as Parts V, VI, and VII (containing sections 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, and 35) were concerned, before Parliament, on the ground that the powers sought by the London County Council were :—

(*a*) Supervisory powers, already possessed by the Local Government Board and the Board of Agriculture and Fisheries; or

(*b*) Administrative powers, which were either already possessed, or much needed, by the Metropolitan Sanitary Authorities.

A petition against the Bill was, consequently, filed, and presented to the House of Commons on February 11th, 1905. It was unnecessary to go to the expense of instructing and retaining counsel on behalf of the Branch, as the London County Council withdrew entirely from the Bill the parts and sections objected to by the Branch—a decision that is the more regrettable, having regard to the fact that the House of Commons itself instructed the Police and Sanitary Committee of the House to alter Parts V, VI and VII, on the lines suggested by the Branch in their petition.

The Branch had to oppose a similar London County Council Bill in 1902-3, with regard to certain sections dealing with infected milk, and were successful in their opposition before the House of Lords, in that the sections opposed were deleted by the Committee appointed by the House.

(10) *Proposed Alterations of the Articles of Association of the Society.*—Important alterations of, and additions to, the Society's Articles of Association have been suggested by the Branch to, and agreed to by, the Society, by which it is hoped that the membership of the Society will be enlarged and the good work (already done and still being done by the Society) will be materially increased.

(11) *Date of Publication of Annual Reports.*—The Branch is arranging with the Registrar-General for the Publication (advance proofs or otherwise) in March (each year) of the Annual Summary, or, at least, such portion of the Annual Summary as has reference to the Metropolis.

(12) *Draft Bye-Laws of the Local Government Board as to Houses Let in Lodgings.*—Important suggested additions and alterations have been agreed to, and sent on to the Local Government Board, by the Branch, suggesting, *inter alia*, that the "owner" under the Bye-Laws should be defined as in section 141 of the Public Health (London) Act, 1891, and should be made jointly responsible with the "landlord" (as defined in the Bye-Laws) for the annual cleansing, and ventilation, of the premises: that both "owner" and "landlord" should be served with notices before action is taken against either, or both.

(13) *Infectious Diseases and Schools.*—The Branch has made a representation to the London County Council (as the Educational Authority for

the Metropolis), asking them to instruct their officers to keep the Medical Officers of Health of the different Metropolitan Districts notified at once (by the teachers of schools, etc.), as to the presence of infectious diseases amongst the scholars of the different schools, which are under the jurisdiction of the London County Council, in accordance with the terms of the Code of Regulations (issued by the London County Council).

(14) *Monetary Votes made by the Branch.*—The Branch, during the year, has voted (*a*) £10 to the Library Committee of the Society for the purchase of books, etc.; (*b*) £5 5s. to Mr. Kent, for services rendered as late clerk.

Signed on behalf of the Council,
H. W. ROBERTS, *President.*

The following officers and representatives on Central Council and on Branch Council were elected: President, Dr. Joseph Priestley; Vice-Presidents, Dr. H. W. Roberts, Dr. R. Dudfield; Hon. Treasurer, Dr. H. W. Roberts; Hon. Secretary, Dr. Wellesley Harris: Representatives of Branch on Council of Society, Drs. W. A. Bond, R. K. Brown, L. T. F. Bryett, S. Davies, R. Dudfield, O. Field, G. F. McCleary, G. Newman, H. W. Roberts, P. C. Smith: Council of the Branch, the above, and Drs. F. J. Allan, G. B. Millson, J. F. J. Sykes.

A hearty vote of thanks was accorded to Dr. Roberts for his services to the Branch during the past year.

Exclusion of Children from School.—Dr. Reginald Dudfield called attention to the instructions contained in the Code of the County Council, with reference to the exclusion of children from houses in which there were cases of measles and whooping cough. A discussion ensued.

Yorkshire Branch.—The Annual Meeting of the Branch was held at the County Hall, Wakefield, on Wednesday, the 26th July, 1905.

There were present: Drs. Scatterty (the President), in the chair; D. L. Anderson (Doncaster), Buck (Hunslet R.), Burman (Wath-on-Dearne), Forsyth (Birstall), Halliwell (Dewsbury), Hunter (Pudsey), Housley (Retford), Knight (Scarborough), Lambert (Farsley), McLean (Doncaster R.), Smith (York), H. Maclean Wilson (Wakefield), J. Mitchell Wilson (East Riding), and J. R. Kaye (Hon. Sec., Wakefield).

The Annual Report was then presented by the Honorary Secretary, and adopted. It was as follows:—

"The Session 1904–5, constituted the 28th year of the Yorkshire Society's career, and has been distinguished by the Presidency of Dr. W. Scatterty, the Medical Officer of Health of the Borough of Keighley.

"The first meeting was held at Rotherham on the 28th October, 1904, when we had the President's address on 'Hospital Isolation'—full of practical points arising out of his extensive experience, and especially dealing with the much discussed question of the treatment of scarlet fever. At the same meeting Dr. Riddell's paper on 'Hereditary Immunity to Vaccinia and Variola,' proved of particular interest, having regard to the then existing prevalence of small-pox in the Riding. A discussion on the proposed revision of the Model Bye-laws for New Streets and Buildings in Rural Districts, had to be adjourned.

"At the January meeting, held at Wakefield, the Branch were indebted to Dr. A. Anderson, of Wortley, for a most valuable discourse on the prevention of complications and return cases in the hospital treatment of scarlet fever. Dr. Anderson gave the results of his painstaking investigation of this subject, and specially emphasized the importance of antiseptic precautions in hospital, and the individual nursing of patients. Dr. Hicks, of Easingwold, also read a paper on "The use of Sera—

particularly the Anti-streptococcic Serum of Puerperal Fever." Detailed notes were also submitted regarding an outbreak of small-pox among school-children at Ossett, investigated by Drs. Greenwood and Kaye, and showing in a striking manner the uniform protective power of recent vaccination, and the extreme susceptibility of unvaccinated children.

"The Annual Dinner of the Branch was held at Leeds on the 3rd March, 1905, when Sir Shirley Murphy, the distinguished Medical Officer of Health for the London County Council, and other eminent guests were present. The event was not only enjoyable from a social point of view, but was as valuable as an ordinary meeting by reason of the progressive character of the speeches made on the occasion.

"The meeting at Keighley on the 15th June was devoted chiefly to an inspection of the Keighley and Bingley Joint Hospital. Dr. Scatterty conducted the members over the institution, and explained many practical details in connection with its administration. Subsequently an opportunity was given for the inspection of the filtering plant at the Corporation Waterworks, and the method of correcting any plumbo-solvent tendencies of the supply.

"At all the meetings of the Branch there has been a goodly attendance of members, bearing in mind the distance which many members must necessarily travel to reach any given meeting-place. The Branch has been hospitably welcomed by the authorities in whose districts meetings have been held, and every opportunity has been extended to members to visit and inspect public works of a sanitary nature in the vicinity.

"The membership continues to stand at a highly satisfactory number, the gaps by resignation and removals having been more than counterbalanced by the election of new members. The Council record with regret the decease of Dr. T. Percival, an old and respected member of the Branch, and one of its vice-presidents."

Dr. E. M. Smith, of York, read an interesting paper on the Midwives Act, which created some edifying discussion, particularly with regard to the training of midwives, their suspension in cases of infectious disease, and the measures for their disinfection.

Eastern Counties' Branch.—A meeting was held at Colchester, on July 29th. Present: Drs. Bushell Anningson (President), H. W. Beach, Cooper Pattin, W. G. Savage, Gibbs Smith, and Major Freeman.

Dr. Cooper Pattin was elected President of the Branch for the ensuing session, and the other officers of the Branch were re-elected.

After an adjournment for lunch, Dr. Savage read a paper on Municipal Laboratories, and afterwards demonstrated certain points which he had raised, in the Colchester Municipal Laboratory. A vote of thanks to Dr. Savage for his very practical and useful paper was moved by Dr. Anningson, and supported by Drs. Cooper Pattin, Freeman, and Beach, who took part in the discussion which followed the paper.

Contamination of Meat.—Dr. J. F. Butler-Hogan, Medical Officer of the Tottenham District, has issued the following circular, which is posted in most of the butchers' shops in the district: "With a view to prevent contamination by handling of meat exposed for sale, and furthermore of preventing the spread of infectious diseases thereby, I hereby request you to provide a suitable supply of forks wherewith intending purchasers may make examination of meat in your shop."

CURRENT PUBLIC HEALTH LITERATURE.

Zeitschrift für Hygiene and Infectionskrankheiten,

Vol. XLVIII, Part I.

5. Contribution to the question of the Penetrability of the Wall of the Intestinal Canal, by Organisms under Physiological Conditions. Dr. B. Klemenko, Institute of Infectious Diseases, Berlin. (The author here made experiment by feeding animals with several species of non-pathogenic organisms. He concludes that the intestinal wall of perfectly sound animals is impenetrable by micro-organisms, but admits that perfectly healthy animals are very seldom met with.)
6. Contributions to the Question of the Formation of Antitoxin. Dr. Carl Bovek, Institute of Infectious Diseases, Berlin.
7. Contribution to the Bacteriological Examination of Preserved Meat. Prof. E. Pfuhl, Berlin.
8. Contribution to our Knowledge of Nitrifying Bacteria. Dr. G. Wimmer, University of Halle.
9. On a Note of Dr. K. Kisskalt, Concerning a work on the Bacillus Prodigiosus. Dr. E. Bertarelli, Turin.

Vol. XLVIII., Part II.

1. Inquiries on the binding of Diphtheria Toxins and Antitoxins, being at the same time a Contribution to the Knowledge of the Constitution of the Diphtheria Poison. Prof. J. Morgerroth, Frankfurt-a-Main.
2. The Action of Formalin on Milk and Rennet Ferment. Dr. Ernst Löwenstein (see Translation of Article in *Public Health*, p. 452).
3. Inquiries on the Connection between the Manufacture of Hæmolysins and Agglutination in Staphylococci. Drs. Kutscher and Fr. Konrich, Berlin.
4. On the Influence of Inhalation of Sulphuric Acid on the Development of Phthisis. (A Contribution to the Study of Occupation Diseases.) Dr. Karl Kisskalt, Giessen.
5. On the Virus of Exudative Typhoid in hens. (Second communication.) Prof. Arnaldo Maggiora and Dr. G. L. Volenti, Modena. With Plate.

Vol. XLVIII., Part III.

1. On the Histological Changes produced by Plague in Man. By Dr. Hassan Hamdi (Imperial Ottoman Military Physician). (This is a detailed account of post-mortem in several cases of plague. There is an excellent coloured plate.)
2. Further Inquiries into Plague, especially with regard to Immunity against it. By Prof. Dr. W. Kolle, Dr. H. Hitsch, and Dr. R. Otto (The Institute for Infectious Diseases, Berlin). Director: Prof. R. Koch.
3. On Antilactase. By Dr. Albert Schütze (The Institute for Infectious Diseases, Berlin).
4. On the Actinomyces Question. By H. Neukirch D. Natphil.
5. On the Behaviour of Indigenous Japanese Cattle to Tuberculose (Perlsucht). By Prof. Kitasato.
6. The Warming of Dwelling Houses by means of the Sun. By Prof. E. v. Esmarch (Göttingen). (This is an account of a series of experiments by

the author, with a view to ascertaining the conductivity of the different materials used for the walls and roofs of dwelling houses, to the sun's rays. For this purpose he had two large wooden boxes constructed, and by exposing them to the sun's rays for different lengths of time, and under different conditions, and measuring the increase of temperature resulting, he obtained some very definite results. He also experimented on the materials commonly used for curtains and blinds, ornamental glass, etc. The factors which had the greatest influence on the permeability of the sun's rays were the thickness, quality, and colour of the material. His results, especially as regards the latter, were very striking, *e.g.* when the same material was used in black and white, the amount of increase of heat of the former inside was double that of the latter. He puts in a very strong word in favour of growing ivy on our walls. He has lived for years in an ivy-covered house and finds that it does not produce damp and keeps the walls cool in summer and warm in winter.)

7. On Liver Abscess complicated by Appendicitis. By Dr. Kartulis (Egyptian Government Hospital, Alexandria).
8. The Significance of Rats and Fleas in the spread of Bubonic Plague. By Dr. Carlo Tiraborchi (Rome). (This paper consists of an historical account of the writings on this subject by various authors. In the first part are collected all the allusions to the significance of rats and mice, and in the second part to fleas and other parasites, to which is appended a list of the various species of parasites and their hosts.)

Vol. XLIX., Part I.

1. On the Variations of the Agglutinating Power of the Serum during the course of Illness in Typhoid Fever. (A clinical and bacteriological study.) By Jul. G. Iversen (St. Petersburg). (This is a detailed account of some 60 cases of typhoid fever in which the agglutination test was at frequent intervals during the course of the disease tested quantitatively. The results in each case are recorded graphically on a suitable chart. In the 60 cases it was found that agglutination set in sooner or later in the disease. In two it required a dilution as low as 1 in 20 and 1 in 40, which by many would be considered negative. In two other cases in which there were relapses, the reaction did not set in till the relapse occurred. Admitting then that 4 out of the 60 were negative, an unquestionable positive result occurred in 93 per cent of all cases.)

The author brings together his conclusions in the following :—

(1) The agglutinating power of the serum in typhoid fever is subject to great variations during the course of the illness.

(2) In mild, uncomplicated cases the agglutination curve slowly rises; at the end of the febrile period or the beginning of convalescence a sudden rise of agglutinating power occurs, followed by as sudden a fall, which may remain fairly constant at this lower value for a considerable time.

(3) In the cases which are followed by relapse agglutination is frequently absent during the first illness, then occurs in the relapse, and is in all cases during this higher than in the original illness.

(4) In some cases agglutinating power disappears during convalescence; in other cases it can be discovered after many years.

(5) In cases which die with the symptom of a severe infection, the agglutination curve shows a steep rise without fall.

(6) Ambulatory and atypical types give mostly a low atypical curve.
(7) Severely protracted and complicated cases give a curve which is irregular or shows successive falls.
(8) Pneumonias due to diplo- and strepto-coccal infections occuring in the course of typhoid act unfavourably on agglutinating power either by depressing it or preventing a rise.
(9) After recovery from typhoid the agglutinating power in many cases continues for a long time, and in some persons is found after 10 years, with a dilution of 1 in 100.
(10) There are cases of icterus, tuberculosis, and septicæmic diphtheria, which, in spite of the fact that typhoid was not and never was present, still give a strong positive Widal reaction, and that in dilutions of 1 in 150, 1 in 250, and even 1 in 1,500.
(11) Since the reaction took place sooner or later in all cases of typhoid, it is specific. On the contrary it is not pathognomonic, since it can occur in the course of other illnesses.
(12) A positive Widal reaction has a great diagnostic value from the second week on, and is to be counted among the cardinal symptoms of typhoid; but the want of agglutinating power in serum is of great significance, for the diagnosis in doubtful cases. The agglutination reaction has no prognostic significance.
(13) There exists apparently no relationship between the severity of the illness and the height and persistence of the power of agglutination.
(14) The open question of the biological significance of agglutination cannot be solved by clinical observation alone, still the view is gaining ground, that it represents a protective reaction on the part of the organism and stands in close relationship to immunity, represents perhaps even a prodromal stage of this.

2. On the Behaviour of the Spores of Favus and Trychophyton in the organism. By Dr. Julius Citron (Berlin). (The author by experiments succeeded in producing an active but not a passive immunity against these diseases.)
3. Studies on the Putrefaction Anaërobic Bacteria of the Normal Human Intestine and their significance. By Dr. Fritz Passini (Vienna). (From the experiments of the author he finds that the ferment of the anaërobic putrefactive butyric acid bacillus influences the precipitating and the precipitogenetic substance of the caseins of cows' milk. During a short period of action these bodies experience an alteration, which finds expression thus, that lactoserum no longer influences the albumin present in the fermented milk, injections of this fluid set free not lacto-serum, but a serum which contains precipitin.)

Vol. XLIX. Part II.

1. On hereditary disposition in pulmonary phthisis. By Dr. Boeg (Nästved, Denmark). (This is an inquiry on phthisis in the Faröe Islands.)
2. The actinomyces question once more. By Dr. Gilbert (Bonn).
3. The campaign against infantile mortality by public bodies and private philanthropy, by means of supplying unobjectionable milk for children, with special reference to conditions in Hamburg. By Dr. von Ohlen (Hamburg). (This article, after dealing with the statistical aspects of infantile mortality, gives an account of the milk depôts and similar

institutions in the different civilized countries—*vide* special article on Germany.)

4. A contribution to the statistics of typhoid fever in the Grand Duchy of Hesse. By Dr. Paul Neumann (Giessen).
5. The diagnosis of rabies. By Lina Luzzani (Pavia).
6. The reaction of cows' milk to "fuchsin-sulphuric acid," and the demonstration of formalin in milk. By Dr. E. Seligmann (Berlin).

Part III.

1. A case of stomatitis from the clinical and bacteriological standpoint. Bacterium stomato-fœtidum, as an aërobic putrefactive organism. By Dr. T. Fischer (Stockholm).
2. Fatal infection by the bacillus aureus fœtidus, nov. spec. By Prof. Dr. Maximilian Herzog (Manila, Philippine Islands).
3. On the pollution of the air, "retention of heat," and ventilation in closed rooms. By Prof. C. Flügge (Breslau). The experiments on this subject by Prof. Flügge lead to the following conclusions:—
    (1) The numerous experiments conducted on the healthy and sick by the more refined methods, and with more careful regard to the thermic condition, establish that the chemical alterations in the composition of the air in inhabited rooms, which are caused by gaseous human excretions, do not exercise an injurious influence on the occupants.
    (2) When in closed rooms filled with people such disturbances of health occur as giddiness, lassitude, vertigo, nausea, etc., these are to be put down solely to retention of the heat by the body (Wärmestauungssymptome).
    (3) The thermic conditions of the surrounding air—warmth, moisture, movement—are of more significance to our feeling of health than the chemical composition of the air. The feeling of refreshment which we experience by complete airing of closed rooms or in the open, results not so much from the greater chemical purity of the air as the cooling of our bodies.
    (4) Over-heating of our living-rooms must therefore be as much as possible avoided, and while this is difficult in the height of summer, it is comparatively easy at other times.
    (5) Arrangements for heating must be so made that the highest temperature does not exceed 21° C. This is most important in public buildings and schools. The temperature should as a rule range between 17° and 19° C.
    (6) In the over-heating of rooms, relief can often be given without access of air from without, by causing an artificial circulation of the air in the room.
    (7) Airing of a room occupied by people by admission of air from outside in the winter is dangerous and to be avoided, because the stream of cold air acting on over-heated skins can easily give rise to a cold.
    (8) Over-heating of a room can be obviated by periodical airing while it is unoccupied.
    (9) As regards the smells in rooms which have their origin in decompositions of various sorts on the skin and mucous membranes as well as the clothes of the occupiers, there is no proof that they are injurious to health.

(10) On the other hand these smells are disgusting to those entering the rooms and should therefore be as much as possible removed.

(11) This can be done partly by preventive measures and deodorization, partly by continual aspiration, or periodical airing of the room when unoccupied.

(12) The removal of dust and infection from inhabited rooms cannot be attained by airing.

4. The influence which the rebreathing of expired air has upon the excretion of CO_2. By Dr. Bruno Heymann (Breslau).
5. The influence of the air of inhabited rooms. By Dr. L. Paul (Breslau). (He states: "According to the results of these experiments (recounted in the paper), it can no longer be doubted that the unpleasant symptoms which one experiences in the crowded gatherings of churches, schools, etc., are independent of the breathing of the air of these places, and to that extent the chemical impurities of the air play a secondary roll. On the contrary the experiments teach that more stress must be laid on physical reaction of the air in such gatherings. Without doubt it is especially the prevailing temperature, moisture, and movement of the air which, by preventing a sufficient loss of heat from the body, lead to the symptoms known best under the name of 'heat-retention-symptoms' "[Wärmestauungssymptome]".)
6. The behaviour of invalids towards polluted air in dwellings. By Dr. W. Ercklentz (Breslau). His conclusions are on similar lines to last.
7. On the specific immunity reaction of species. By Dr. Leo Zupnik (Prague).

VOL. L. PART I.

1. Inquiries on the tsetse-disease with reference to the immunizing of domestic animals. By Prof. Erich Martini. (This was an inquiry carried out under the direction of Prof. Robert Koch).
2. On the influence of some aldehydes, especially of formalin, on the oxidation ferments of milk and gum arabic—with a supplementary account on the stability of formalined milk. By Dr. E. Seligmann (Berlin).
3. On the power of resistance of different kinds of bacteria against drying, and the preservation of bacteria-holding material, especially in contagious disease and medico-legal questions. By Prof. Dr. L. Heim (Erlangen).
4. Observations on Streptococcus mucosis. By Prof. D. L. Heim (Erlangen).
5. Contribution to the serum diagnosis of illnesses due to staphylococci in human beings. (Preliminary communication.) By Drs. Carl Bruck, George Michaeles, Ernst Schultze (Berlin).
6. On formalined milk and the behaviour of formalin towards some species of bacteria. By Paul Sommerfeld (Berlin).

Deutsche Vierteljahrschrift für öffentliche Gesundheitspflege (The German Public Health Quarterly), XXXVI., PART IV., 1st HALF (BRUNSWICK), 1904.

Hygienic Forms of Apparatus for Washing Cooking Utensils. By Dr. Czaplewski (Director of the Bacteriological Laboratory, Cologne).

The Hygienic Progress of the Town of Beuthen (Upper Silesia) in the last decennium. By Dr. Bloch (Beuthen).

The Spread of Typhoid Fever in Prussia in the decennium, 1892–1901, with remarks on the Origin, Spread, and Stamping Out of the Disease. By Dr. M. Pistor (Berlin). (A lecture before the Epidemiological Society of London.

On the Value of the Medical Certification of Death for the Statistics of the Causes of Death. By Dr. J. J. Reincke (Hamburg).

A New Method of Estimating the amount of Dust in Air, and its mode of use in estimating the efficiency of a new apparatus for clearing a room of dust by means of a water spray. By Dr. Konrad Stich (Leipsic).

Bulletin de l'Académie de Médicine (Paris).

(No. 48, Dec., 1904.) Alcoholism, Tuberculosis, and Syphilis: Proposals for a reform of Official Death Statistics. C. Fernet.

Vol. LXIX, 1905.

(No. 4.) Apparatus for Testing Purity of Air in Rooms. Albert-Levy and Pecoul. (The method described is based on the fact that a fluid containing iodic acid changes colour when in contact with 1/200,000 CO_2. The jar containing the iodic acid is heated by a spirit lamp, liberating the iodine, which passes into a glass tube containing chloroform. The apparatus is small and portable.)

(No. 7.) A New Graduated Nursing Bottle. Variot. (The scale of the amount of milk the infant should have at different ages is stamped in relief on the bottle; the scale is as follows:—

First week	30 gm.
Second week	45 ,,
Third week	60 ,,
Fourth week	75 ,,
Sixth week	90 ,,
Ninth week	105 ,,
Third month	120 ,,
Fourth month	135 ,,
Fifth month	160 ,,
Seventh month	180 ,,
Ninth to Twelfth month	200 to 220 ,,

The bottles are made in two sizes. The first is stamped with the scale up to the third month, and the larger bottle with the rest of the scale. The intervals between meals are also stamped beside the scale, and the number of meals, corresponding to the age of the infant. These graduated bottles have been found very practicable to use instead of ordinary milk bottles, and milk is distributed regularly in them at several French charity milk stations.)

Yellow Fever and Mosquitoes. A. Chantemesse and F. Borel. (The 43rd parallel of latitude has always been recognized as the northern limit of yellow fever in Europe. Sailing vessels are liable to be weeks traversing the torrid zone. This allows the stegomyia time to breed, and yellow fever appears on board in successive series of cases. Steam vessels, on the other hand, traverse the torrid zone quickly and bring the stegomyia into a climate unfavourable for its propagation, so that the vessels are practically sterile when they enter a northern harbour.)

(No. 8.) Wax Paper Spit-boxes. Fournier. (These are made of paraffined cardboard and contain a little powdered charcoal. After use they are burnt.)

Revue de Médicine (Paris), Vol. XXIV.

(No. 1.) The fear of "Catching Cold," in relation to Tuberculosis. A. Chelmonski.

Association of Scarlet Fever and Typhoid Fever—two cases. V. Le Goic.

(No. 3.) The Bacillus of Dysentery. L. E. Bertrand.

(No. 4.) Acid Salts in the Blood in relation to Tuberculosis. C. Canter. (He is convinced that a low state of acidity and a deficiency of phosphates in the blood are the predisposing causes in the pretuberculous stage. By increasing these a patient may be protected or cured if the disease has not advanced too far.)

Presse Médicale, 1904.

(No. 71.) Angina and Malignant Pseudo-diphtheria due to Streptococci and Pneumococci. G. Testevin and P. Busquet.

(No. 76.) Leprosy in France and her Colonies. E. Jeanselme.

(No. 77.) The Danger of Infection in the Sanatorium. C. Malibran and L. Gassot.

(No. 86.) Sero-therapeutics in Typhoid Fever. Chantemesse.

(No. 89.) Transmissibility of Amœbic Dysentery. C. Dopter. (Continued from No. 84.)

(No. 93.) Abortive forms of Infantile Scurvy. V. Hutince.

(No. 96.) Mechanical Methods for the Purification of Milk. P. Diffloth. (Excellent results have been realized by the cotton filters, a Swedish invention, now used for purifying milk. The milk is strained through two wire strainers holding between them a flat, round, small sheet of cotton. The cotton is thrown away and replaced by a fresh disc of cotton after using. In eight months of tests with this cotton filter his inoculation of animals with the milk never caused morbidity, and the milk thus filtered could be kept for many days without souring. Diffloth regards the results of these tests as very remarkable in regard to the preservation of the chemical composition and of the digestibility of the milk, but as the milk was obtained from a model dairy they are not conclusive in respect to the microbes. Centrifugation has no effect on pathogenic germs in milk, or is liable to favour their proliferation.)

(No. 99.) The Progress of Vaccination. M. Labbé.

(No. 102.) Tuberculosis in French Rural Districts. R. de Gantijac.

American Medicine, 1904.

(Oct. 8.) Mild and Abortive Cases of Typhoid Fever. Jno. B. Briggs. (It is altogether probable that mild typhoid is affecting a large number of people every autumn and winter, and it is certain that in the majority of instances the disease is not recognized. Very few of the patients present themselves for hospital treatment; while in private practice the absence of striking features in this type of the disease accounts for its attracting less attention than the much rarer fulminant, hæmorrhagic, and other extraordinarily severe forms. The paucity of symptoms makes thorough physical examinations and frequent collections of blood for Widal tests apparently unnecessary. Five cases are cited and the symptoms discussed in detail.)

(No. 19.) The Post-discharge Mortality among 1,157 Patients of the Adirondack Cottage Sanatorium. Lawrason Brown and E. G. Pope. (They emphasize that the real test of the sanatorium treatment is not the immediate but the ultimate result. The mortality among patients discharged in various conditions affords the best method of studying the permanent results of sanatorium treatment. Of those discharged apparently cured, 93 per cent of the expected living are alive; of the disease arrested, 65 per cent; of the cases discharged with active symptoms, 23 per cent. The authors found that the death rate among the apparently cured patients is, during the first ten years, about three times the ordinary death rate. The death rate among the patients discharged with the disease arrested increases during the first few years to many times (10 to 15) the normal death rate, but afterward decreases. Nearly half the patients discharged with an active disease from the Adirondack Cottage Sanatorium died in the first two years. Patients between 30 and 40, when discharged apparently cured, seemed to relapse less than younger patients. This tendency is little, if at all, marked among the patients discharged with the disease arrested.)

(Nov. 26.) Intubation in Laryngeal Diphtheria. Rosa Engelmann.

(Dec. 3.) Tubercle Bacilli in the Urine. (R. C. Rosenberger examined the urine for tubercle bacilli in 25 cases of pulmonary tuberculosis in which there was positively no involvement of the genito-urinary tract. A few isolated tubercle bacilli were found in only three cases, and no clumps or groups of bacilli were observed, as are usually seen in cases of tuberculous cystitis, nephritis, etc.

(Dec. 10.) Dangers of the Microscope in Tuberculosis. (H. C. Clapp decries implicit reliance on the microscopic findings for a diagnosis of incipient pulmonary tuberculosis. He says a skilled auscultator (and all physicians should be skilled auscultators) can very often recognize an incipient case before tubercle bacilli appear in the sputum. Very often, not by physical examination alone, but by a thoughtful consideration of symptoms and physical signs, in connection with a close study of the personal and family history of the patient, aided, if necessary, by the tuberculin test, a satisfactory conclusion can be reached weeks and months before the bacilli appear in the sputum or even before the sputum itself appears, and thus gain time enough, perhaps, to save the patient.

(Dec. 31.) The Cause of Death in Cases Operated on of Intestinal Perforation occurring in Typhoid Fever. J. H. Anderson (Pittsburg).

Polyneuritis complicating Typhoid Fever, with Unusual Localization. Alfred Gordon (Philadelphia).

American Journal of the Medical Sciences (Philadelphia).

(October, 1904.) Acute Leukæmia in Early Life. Frank S. Churchill.

A Case of Acute Lymphatic Leukæmia. R. C. Rosenberger.

Experimental Arthritis and Endocarditis produced by a Streptococcus isolated from the Blood of a Case of Rheumatism, Endocarditis, and Chorea. M. J. Lewis and W. T. Longcope.

The Shape of the Chest in Health and in Pulmonary Tuberculosis. L. Brown and E. G. Pope.

Pulmonary Streptothricosis. Alfred S. Warthin and Herbert S. Olney. (Among the recently reported cases of human infection with streptothrices there stands out prominently a small but exceedingly interesting group of pulmonary cases presenting the clinical picture of tuberculosis, broncho-pneumonia, or gangrene, but in which the infective agent appears to be some form of streptothrix, probably S. eppingeri.)

Tuberculosis and Heart Disease. G. W. Norris.

(Nov.) Pneumococcus Endocarditis. R. B. Preble.

Three Cases of Croup due to Staphylococcus requiring Tracheotomy. F. P. Anzinger.

A Study of the Group of Actinomyces, with a Report on a Species Pathogenic for Man. W. R. Stokes.

Journal of Medical Research (Boston).

(October, 1904.) A Clinical Study of the Hæmolytic Action of Human Blood Serum. John M. Polk.

Experiments with Tuberculins made from Human and Bovine Tubercle Bacilli. S. P. Wolbach and Harold C. Ernst. (They have repeated the original experiments of Koch with tuberculin on tuberculous guinea-pigs, using for this purpose freshly isolated cultures and freshly prepared tuberculin of their own make. At the same time tests for differences in the specificity were made with tuberculins from both human and bovine tubercle bacilli. The conclusions arrived at are: 1. That there is no difference in specificity between tuberculins made from human and bovine tubercle bacilli. 2. That the tuberculin treatment, on the whole, acts favourably on tuberculous guinea-pigs. 3. That there are no essential differences in the disease processes caused by the human and bovine tubercle bacilli.)

The Further Differentiation of Flagella and Somatic Agglutinins. Henry G. Beyer and Arthur L. Reagh.

The Experimental Production of Liver Necroses by the Intravenous Injection of Hæmagglutinins. Richard M. Pearce.

The Precipitin Reaction of Human and Cow's Lacto- and Caseo-Serum. Samuel Amberg.

A Study of the Etiology of Variola. William T. Howard, Junr., and Roger T. Perkins. (The work of Councilman and his co-workers is confirmed. The material derived from 49 autopsies on cases of variola and from skin excised from 8 cases in various stages of the disease were studied. They also confirm all of the cycle as made out by Calkins, except the invasion of nuclei by gemmules, these going through a stage leading to the formation of male gammetocytes. They recognize a primary and a secondary cytoplasmic and a primary and a secondary intranuclear stage. The end forms of these stages are: (*a*) The gemmule; (*b*) large solid nucleated forms—the zygote-like body of Calkins; (*c*) small ring-like spores in both the intranuclear stages. The paper closes with the statement that: "The relation of these parasites to the skin lesions is of such a definite and intimate character as to lead to the conclusion that they are the cause of the disease.")

(Nov.) The Differentiation of Bacillus Diphtheriæ, Bacillus Xerosis, and Bacillus Pseudo-diphtheriæ, by Fermentation Tests in the Serum-water Media of His. Arnold Knapp.

The Effect of Filtration on Bacteriolytic Complement. Enda Steinhardt.

Specific and Non-specific or Group Agglutinins. Wm. H. Park and Katharine R. Collins.

Comparative Histology of Vaccinia and Variola. James Ewing.

(Feb., 1905.) Structure of Vaccine Bodies in Isolated Cells. J. Ewing (Ithaca, N.Y.).

Studies in Mammalian Tubercle. III. T. Smith (Boston).

Typhoid Filtrates in the Treatment of Typhoid. N. W. Richardson (Boston).

Bacteriolytic Power of Normal Rabbit Serum. B. H. Buxton (New York City).

Mixed Tumours of the Lacrymal and Salivary Glands. F. H. Verhoeff (Boston).

Degrees of Susceptibility to Diphtheria Toxin among Guinea-pigs. Transmission from Parents to Offspring. T. Smith (Boston).

Journal of Infectious Diseases (Chicago).

(Nov., 1904.) The Life-history of Trypanosoma Lewisi and Trypanosoma Brucei. Ward J. MacNeal.

Pathologic Anatomy of Experimental Nagana. Frederick A. Baldwin.

The Blood in Measles. Wilder Tiliston.

The Reduction of Methylene Blue by Nervous Tissue. H. T. Ricketts.

The Antagonism Exhibited by Certain Saphrophytic Bacteria against the Bacillus Typhosis Gaffky. Wm. D. Frost.

The Longevity of the Typhoid Bacillus in Water. E. O. Jordan, H. L. Russell, and F. R. Zeit. (The writers state that they were requested by the Sanitary District of Chicago in the autumn of 1903 to conduct some experiments on the life of the typhoid bacillus from the waters of Lake Michigan, the Chicago Drainage Canal, and the Illinois River. From these experiments it appears that under conditions that probably closely simulate those in nature, the vast majority of typhoid bacilli introduced into the several waters studied perish within three to four days. The authors state that it is theoretically possible that specially resistant cells may occur which are able to withstand for a longer period the hostile influences evidently present in water. Their experiments, however, show that if such resistant individuals exist they must be very few in number, and constitute only a small fraction of the bacilli originally entering the water. But they do not claim that the behaviour of typhoid bacilli under the conditions described by them is representative of all conditions obtaining in all natural bodies of water.)

The Question of Virulence among the so-called Pseudo-diphtheria Bacilli. Alice Hamilton.

Experimental Streptococcic Arthritis in Relation to the Etiology of Acute Articular Rheumatism. Rufus I. Cole.

(Jan., 1905.) Some Physical Properties of Enzymes. E. J. Levi, Ann Arbor.

Fatal Infection by a Hitherto Undescribed Chromogenic Bacterium, Bacillus Aureus Fœtidus. M. Herzog (Manila, P.I.).

Observations on the Bionomics of Anopheles. E. O. Jordan and M. Hefferan (Chicago).

Summer Diarrhœa in Infants. G. H. Weaver, R. M. Tunnicliff, P. G. Heinemann and Mae Michael (Chicago).

Identification of Alcohol-soluble Hæmolysins in Blood Serum. A. Woelfel (Chicago).

Protective Inoculation against Asiatic Cholera. R. P. Strong (Manila, P.I.).

Studies in Phagocytosis. L. Hektoen and G. F. Ruediger (Chicago).

INDEX

Abbott, Dr., U.S.A., Death of, 408
Aberdeen, Class of Houses in, whence come best schoolboys, 308
Typhus Fever in, transmission of, by Vermin, (Hay), 535
Ablutionary difficulties in mining towns, 532, 533
Accrington, and Medical Inspection of Schools, 786
Acid-fast Bacilli, New Property of, (Piatowski), 67
Action, The, of Formalin on Milk and Rennet, G. Löwenstein, (*Tables*), 453, *see specially* pp. 456 and 457
of the Merthyr District Council, under the "Housing of the Working Classes Acts," D. J. Thomas, *plans*, 526, 583, discussion, 532
Acute Glanders in man, (Bucaloghi Stoicescu), 735
Administration *versus* Legislation, 755
Adulteration of Butter, and Inspection, question *re* in Parliament, 538
of Milk, Difficulties in dealing with, (abstract of Report of the Board of Agriculture for 1903), *tables*, 86
Africa, South, Typhoid in, spread by Flies, 712-13
Agricultural Anthrax in Great Britain The cause of the increase of, S. Delépine, *tables* and *charts*, 491, 542, discussion, 517
Carcases carelessly or illicitly dealt with, 507, cases in point, 507, *et seq.*
Chief causes of, 515
Counties most severely affected, 497
Danger of it spreading among men, 517
Difficulties of Post-Mortem Microscopical Diagnosis, 514
Dr. Legge on, *letter* (*diag.*), 518
Manchester Abattoir Methods and, 505, 510
Notification and fee for the same advised, 515, *see also* discussion
Prevalence of, in Winter, 504
Preventive measures advised, 515-7
Soil Pollution from, 505
Symptoms and course in Cattle, Horses, Sheep and Pigs, 511, in inoculated animals, 512 *et seq.*
Transmission of carcases and farm disposal thereof as sources of infection, 506-7
Aid, An, in the Treatment of Tuberculosis, (Cyllin), W. C. Lodwidge, *letter*, 103
Aids to the Diagnosis of Tuberculosis, (Marzagalli, and Holmgren), 408
Air, The, A Comparison of Simple Methods of Determining Carbon Dioxide in, (Lauenstein), 43
Convection of, in Isolation Hospitals, 366, 385
Provision of, to buildings, 150
Air space in Isolation Hospitals, L.G.B.'s requirements, 397
in Schools, Greenwood on, 651
Air Temperature and Movement in relation to Ventilation, 35
Alcohol, Effect of, on School Children, T. A. Macnicholl, 774
Alcoholism among Criminals, 304
Official teaching concerning, in Prussian Schools, 213
in relation to Physical Deterioration, 300, 317
Alien Immigrants Bill, Ports scheduled under, 614
Alkali, &c., Works Bill, Aims of, 615
Allan, C. E., The Liability of Vendors of Infected Food, 415
F. J., on Hygiene in Universities, etc., 221
on Jewish Children, 290
on Women Health Visitors, 289
Alleged Physical Deterioration in Towns, A. Newsholme, *tables*, 293
America, United States of, *see* Boric Acid and Borax, Iowa, New York, Philadelphia, and St. Louis, Scarlatinal Infectiousness, Walker, *and* Wiley
Dangers of Paper Money in, (Hurty), 47
Disinfection of School-Books in, 62, *do.*, of Schoolrooms, 622
Effect of Alcohol on School-Children in, T. A. Macnicholl, 774
Experimental Measles in, L. Hektoen, 776
Fever Hospital Methods in, 391
Keeping Property of Milk, (Conn.), 92
Plan in, for School Instruction in Hygiene, 213
Proportion of the Sexes in, 756
Report of the Bureau of Chemistry on Boric Acid and its influence on health, 41
Smoke Emission, Regulations controlling, 582
Anæmia in relation to Food, 315
Ancient Lights, 148, E. K. Blyth *cited* on, 149
Anders, J. M., Prophylaxis of Lobar Pneumonia, 777

Anderson, A., Scarlet Fever; Some points in the Prevention of Hospital Complications and Return Cases, 365, 372, discussion, 372
Anderson, Miss, in discussion on Physical Degeneration, 286
Angior, T. M., on paving, and notification in regard to Infectious Disease, 654
Ankylostoma in Coal Mines, 245
Anningson, B., Cambridge—Then and Now, 715
Anthrax, (*see* Agricultural Anthrax), in Great Britain in 1905, 525
  in Lanarkshire, (Wilson's Report), 534
  Spores (of), The influence of the Tanning Process upon, (Kessler), 273
Anthrax-Infected Carcases, Disposal of, Cremation suggested, 525
Anthropological Society, memorial from, on Physical Deterioration, to the Education Department, 785
Anthropometric Survey, desirability of permanent, 275, 285, 286, 305
  Official suggested, 785
"Anti-s," and degeneration, 304
Antimoniuretted Hydrogen, in connection with Electrical Appliances, McWalter on, 328
Antiseptic Precautions in Isolation Hospitals, 368, instances of neglect of, 361
Anti-Typhoid Inoculation, German views, 666
Apoplexy, Atmospheric Pressure and, W. H. Symons, *charts* and *tables*, 602
Application, The, of the Housing of the Working Classes Acts in Rural Districts, T. W. H. Garstang, 747, 756, discussion, 756
  Conclusions—
    Cumbersome and costly, 755
    Improved administration a desideratum, *ib.*
  Cost, in relation to, 750, 753, 755
  Cottages for Labourers, essentials in, 753
  Divisions of the Act, impractibility of, in poor or rural districts, 751-3
  Rural Councils which have taken action under, 751
Appointments, (*see* 253), 444, 535, 622, 729
Architecture, Public Health and, (Presidential Address), *ill.*, J. F. J. Sykes, 129
    Air Space, 150
    Ancient Lights, 148, E. K. Blyth *cited* on, 149
    "Areas," 159-61
    Balconies as means of access to flats, 177
    Bathrooms, 164, 168
    Brick-making, pioneers of, 140, 141
Architecture, Cave-dwellings, past and present, 134-6, analogies of, with flats, 157
  Circumstances modifying, 137
  Corridors, (and their drawback), 170 *et seq.*
  Defined, 130
  Enclosed courts, dangers of, 154, *et seq.*
  English house, the evolution of, 136-7, 142-3
  Evolution in, 131, *et seq.*
   of the House, 136-7
  Fireplaces, 163
  Flat-dwellers, aversion of, for fresh air, 157
  Flats—
    Back to back, objections to, 180
    M. O. H's certificate in connection with, 182-5
    predominance of for all classes, and essentials in construction of, 167 *et seq.*
    Staircases in, legal points concerning, 182-3
    Ventilation in, 180 *et seq.*
  Glasgow Corporation "Family Home," 165
  Home Life in relation to, 178
  Huts of various races, 134
  New buildings on old sites, encroaching on light and air provisions, 150, *ill.*, 151, 153
  Primitive types of dwellings, 131 *et seq.*
  Rural housing difficulties, 193-4
  Saracenic, its features, 139
  Streets, width of, in relation to light and air, 143-8, 146-7
  Sub-let dwellings, 185
  Suburban working-class dwellings, 192-3
  Tenement houses, desiderata concerning, 185-91
  Tents, 132, 133
  Timber houses, region of, 138
  in relation to Tuberculosis, 165
  Typhoid in relation to dwellings, 164
  Underground dwellings, workrooms, etc., 185-91
  Ventilation, 144, and its four subdivisions, 157 *et seq.*, 180 *et seq.*
  Water-closets, London bye laws concerning, 161-3, 164
  Windows, inadequacy of, as ventilators, 157
    low (even if wide), drawbacks to, 159
  Working-class dwellings, conditions governing the varieties of, 164 *et seq.*
"Areas" to Houses, 159-61
Armstrong, H. E., The Supposed Deterioration and Decrease of our Population in relation to Overcrowding in Houses, *table*, 301
  on Exclusion of Infants from Schools, 219, 308-9

Armstrong, H. E., on Hygiene in Universities, etc., 213
  proposing vote of thanks to retiring President, (Groves), 104
  seconding vote of thanks to Dr. Heron, 224
  supporting resolution *re* Prevention of Small-pox, 729
Army, low physique among would-be recruits for, 237-8
  teaching of Hygiene in, Davies on, 221
Arseniuretted Hydrogen, in connection with Electrical appliances, McWalter on, 328
Asepsis, or Surgical Cleanliness in Isolation Hospitals, importance of, Gordon on, 384 *et seq.*
Aseptic methods desirable in handling Milk, McCleary on, 436
Ashpits as sources of Typhoid, Delépine *cited* on, 710
Assyrian architecture, 140
Athletics, effects of, on Physique, 303
Atmospheric Pressure and Apoplexy, W. H. Symons, *charts* and *tables*, 602
Australia, *see* Sydney
Australasian Commonwealth Quarantine Conference, 93
Austria, (*see* Vienna). Ophthalmia Neonatorum notifiable in, treatment for, 760
Automobile, The, and Tuberculosis, (Blanchet), 691
Average Attendances at Schools, Gloucestershire Education Committee, suggestions *re*, 664
Avian Tuberculosis, (Weber & Bofinger), 691
Awards of Medals, etc., 742
Aylesbury Dairy Co., decision of the Court of Appeal in the Case of Frost *versus*, 415

BACK to back flats, objections to, 180
Bacteria, *see also* Fungi
  Bacillus (i)
    Acid-Fast, New Property of, (Piatowski), 67
    Anthrax Spores, Influence of the Tanning Process upon, (Kessler), 273
    of Avian Tuberculosis, non-identity of, with Mammalian, (Weber and Bofinger), 691
    Coli communis, importance of, in the Bacterioscopic examination of Water, 44, 46-7
      sometimes alone present in Water, causing Typhoid Fever, 353
      in Water recently polluted, 594 *et seq.*
    Diphtheriæ, characteristics of, 272
      Hoffman, *see* Pseudo *infra*
      Klebs-Löffler, found in healthy throats, 705; sometimes found in typical Scarlet-fever, 363
Bacteria (*continued*)—
      Pseudo-*do*, Thomas' views on, controverted by Scatterty, 363
      The Virulence of, *ed.* 271
      Question of its relationship with the Bacillus of Pseudo-diphtheria, 271
    Enteritidis sporogenes, desirability of seeking, in examining water, 44
      in recently polluted Water, 594 *et seq.*
    Pestis, locations of, in Plague in India, (Elliott), 782-3
      Persistence of, in Rats, (Otto, and Kalle, 784)
    Subtilis, in paralysis, 696
    Tuberculosis, 693
    Typhosus, 695
      Eberth's, not always found in Water causing Typhoid, 352-3
  Cocci:
    Diplococcus found in cases of Epidemic Sore-throat, at Paisley, 773
    Streptococci, importance of, in the Bacterioscopic examination of Water, 44, 47
    Pneumococcus, in Lobar Pneumonia, 777-8
  Trypanosoma, the, found in Tsetse fly, Koch *cited* on, 708
Bacteria in Milk, Pus and, (Bergey), 414
  in occupied rooms, 34
Bacterial standard for Milk, a desideratum, Laird on, 442, Buchan on, 443
Bacteriological examination of patients in Isolation Hospitals, Gordon on, 388-9
  of Walter, J. C. Thresh and W. S. Strachan, *tables*, 594
Bacteriology of the Diphtheria outbreak at Leith, traceable to Ulcers on Cows' Teats, 249
Bacterioscopic Examination of Water, The Standardization of Methods for the Report of the Royal Institute of Public Health's Committee on, 44
Balconies as means of access to flats, 177
Berry, Dr. W., on Motoring and Public Health, 687
Bath, Apoplexy in, in relation to Atmospheric Pressure, 602 *et seq.*
  Losses at, in Housing Working Classes, 533
Bathrooms, 164, 168, 532
Baths, Public, in Manchester, increasing use of, 242
Battle, The, of the Standards (of Ventilation), *ed.* 1
Belfast, Milk Question in, objections to Sterilized Milk, 451
  Prizes for Cleanliness in, 396
Bennett, Miss V. E. M., on the Midwives Act, 1902., 576

Benson, Dr., on Clothes as causes of return cases of Scarlet-fever, and of Erysipelas and Puerperal fever, 654
Beri-beri in China and Japan, due to Carbon Dioxide from Charcoal Braziers, 383
Berry, J., in discussion on Medical Inspection in Day Schools, 235
  W., on the Midwives Act, 1902., and its stringency, 591
Bexton, Case of Anthrax infection at, 509
Bill before Parliament:
  Hylton's on Building Control, 754
Birkenhead, Mayor of, supporting resolution *re* Prevention of Small-pox, 729
Birmingham and Consumption, 323
  Milk supply in, precautions concerning, 451
Birth-rate, An Improved Method of Calculating, (Newsholme and Stevenson), 770
  Jewish, United Kingdom, 767, 768
Blackburn, Care of School Sanitation at, *see* Greenwood, A.
Blair, Dr., on Home Isolation and the treatment of Diphtheria and of Puerperal fever, 654
Blaxall, Dr. F. H., death of, 313
Blyth, E. K., *cited* on Ancient Lights, 149
Board of Agriculture, Abstract from Annual Report of, for 1903., on Difficulties in dealing with Milk Adulteration, 86
  limits for fat and fatty solids in Milk, 458
  Order of, *re* disposal of Anthrax-Infected Carcases, 625
  Statement of, on Coccidiosis in Rabbits, 732
Board of Education and the Exclusion of Infants from Schools, 615, 730
  of the United Kingdom, attitude of, to School Instruction in Hygiene, 212
Boiling of Milk, inadequacy of, to Sterilize, Laird on, 438
Bond, J. T., on Bathrooms in Workmen's Dwellings, 532
    Shabby Treatment of, as M.O.H., ("Lancet"), 533
  W. A., on Reform of Milk Supply, and on Sterilization, 434
Boobbyer, Dr., on Reform of Milk Supply, 427
Books for School use, test for size of type, 649
Boric Acid and Borax, The Influence of, on Digestion and Health, (Wiley's Report, U.S.A.), 41
Bottled Milk, H. Jones and others on, 430, 431, 435
Bradford, Diphtheria epidemic at, 1903., bacilli found in healthy throats during, 705
Breast-feeding of Infants, resolution *re*, of Conference on Infantile Mortality, 667
Brickmaking, the pioneers of, 140, 141
Brighton, Feeding of School Children in, 287
Bristol, Apoplexy in, in relation to Atmospheric Pressure, 603
British Medical Association, Circular of, *re* payment for Certificate of Unfitness of Children to attend School, some replies, 665
  Public Health Bill of, attitude to, of L.G.B., 732
  Resolution *re* Qualifications of Inspectors of Midwives, 735
British Statutory Regulations directed to the improvement of the Hygienic Conditions of Industrial Occupations, The effect of, as shown by statistics, L. Ward, 771
Broadbent, Sir W., on the National League for Physical Education, 783
  on Vaccination and re-Vaccination, 726
Brudenell Carter, R., *see* Carter, R. Brudenell
Brunton, Sir L., The Report of the Inter-Departmental Committee on Physical Degeneration, 274, 291, discussion, 284, resolution, 292
Bubonic Plague, Alleged slight Infectivity of, 782
Buchan, Dr., on Pure Milk Supply, 443
Building Bye-laws, in the Country, 753-4
  Long on, 451
  and the Public Health Acts (Amendment) Bill, 614
Burnley, Infant Schools at, 310
Bury, Separate Collection of Waste Paper at, 773
Butler, W., on Reform of Milk Supply, 432
Butter, Adulteration and Inspection of, question *re*, in Parliament, 538
Butter-making, future of, in England, 761

CALCULATING Birth-rates, An Improved Method of, (Newsholme and Stevenson), 770
Calves, *see* Vaccine Lymph *do.*
Cambridge—Then and Now, B. Anningson, 715
Cameron, J. S., on Scarlet-fever, (Anderson), 372
Canada, *see* Montreal
Cancer, Phthisis and Pneumonia, The Distribution of, on the Western Slopes of the Cotteswold Hills, An Inquiry into, J. M. Martin, *tables* and *charts*, 4
  in relation to Physical Deterioration, 316

Cancer, Prevention and Treatment of, Circular to M.O.H., of the Liverpool Cancer Research Committee on, 94
Carbon Dioxide in the Air, A Comparison of Simple Methods of determining, (Lauenstein), 43
  from Charcoal Braziers, a cause of Beri-beri in China and Japan, 383
  Monoxide, Estimation of, (Lévy and Pécoul), 391
Carbonic Oxide Poisoning—The use of Water Gas and other Gases in Factories, A. Whitelegge, 82
  Danger of Gassing, 84
  Kiln inspection in Cement Works, precautions requisite, 85
  Preventive Measures, 83
  Symptoms of, 82-3
  Use of the Oxygen Cylinder, 84
Carcases, Anthrax-Infected, Disposal of, Cremation suggested, 525
Cardiff, and Medical Inspection of Schools, 786
  Midwives in, and the training of Midwives at, 734
  no house famine at, Walford, 532
Carelessness in Nurses in Fever Hospitals, a difficulty, 371, 389
Caries of the Teeth, Increase of, 294, 315
Carnell, E., Overcrowding at Health Resorts, *letter*, 470
Carter, R. Brudenell, on the Prevention of Small-pox in Germany, etc., 729
Catarrhal Icterus, *see* Epidemic *do.*
Cattle, Course of Anthrax in, 511, cows, pregnant, fatality of Anthrax to, 513
Causes, The, of the Increase of Agricultural Anthrax in Great Britain, S. Delépine, *tables* and *charts*, 491, 524, discussion, 517
Cautley, E., *cited* on the difficulty of avoiding increasing the Price of Milk, 425-6
Cave-dwellers, past and present, 134-5, analogies of, with flat dwellers, 157
Cement for Dairy floors, 762
  Works, Kiln Inspection in, precautions requisite, 85
Central Midwives Board, 615
  appliances to be carried by Midwife, 615, *see also* 585
  meaning of the word "Malpractice," 616
  printing of Midwives Roll, 615
Cerebral Hæmorrhage, death-rate from, in Bath, 605
"Certificated Midwives," restriction of the term, 572
Certificates, Medical, *re* Health of Infant Scholars, illegality of demanding, 351
  to Milk Dealers, good results of, 420
Certification of Death, J. W. Hayward, *letter*, 795
Chadwick, J., on Infant Mortality, 244
  on the Midwives Act, 1902., and the improvements already effected by it, 592
Chailey R.D.C., and Mr. Justice Grantham's cottages, 203
Chalmers, A. K., on Feeding of School Children, 288
Charcoal Braziers, Carbon Dioxide from, a cause of Beri-beri in China and Japan, 383
Chemical Products of Respiration as found in rooms, 33
Children, the, Mental and Physical condition of, Do Infant Schools improve? D. Jackson, 311
"Chill," erroneous notions prevalent on, 207-8
Chimneys, Emission of Smoke from, laws concerning in foreign countries, 582
China, Beri-beri in, caused by Carbon Dioxide from Charcoal Braziers, 383
Chipping Sodbury R.D.C., Shabby treatment by, of its M.O.H., (Dr. Bond), 533
Cholera, precautions against its introduction into the Kingdom, 347
  in Swansea, 1866., 79
Cholmeley, H. C. Fairfax-, Co-operative Dairying in England, *abst.*, 761
Chorea, a disease of the School-life period, 235
Chronnell, Dr., on the Midwives Act, 1902, 591
Church, Sir W., *cited* on the need for light and air space in Architecture, 142
Churches and Lofty Halls, Draught Prevention in, (Rietschel), 540
Circumflation, 144, 157
Civic Cleanliness, and its 19th century pioneers, 419
Clarification of St. Louis' Water, U.S.A., 556
Clark, A., speech at Annual Dinner, 118
Classification of Isolation Hospital Patients, Lauder *cited* on, 397
  Official, of Diseases in Germany, (Prussia), 75
Cleanliness of Midwives, Regulations and difficulties concerning, 562, 565-6, *and see* discussion, 574 *et seq.*
  in Milk Supply, *see* A Pure Milk Supply *passim*
  of person, and appliances essential in Milkers, McCleary on, 420, 425, Rayment on, 429
  Prizes for, in Belfast, 396
  versus Sterilization, H. Jones on, 430
Cleanly Methods and Cooling of Milk, good results of, Laird on, 439
Clothes in relation to Infectious diseases, Benson on, 654

Clowne, Derbyshire, Fainting of School-girls at, 664
Coal Mines, Ankylostoma in, 245
Coccidiosis in Rabbits, Board of Agriculture statement on, 732
Collection, Separate, of Waste Paper, (at Bury), 773
Comparison, A, of Simple Methods of determining Carbon Dioxide in the Air, (Lauenstein), 43
Compulsory Notification of Consumption in Norway, (Holmboe), 89
Conditions of Industrial Occupation, *see* Hygienic *do.*
Conference (s) *see* Quarantine, Small-pox, *and* Vagrancy
Construction, constructive arrangement, etc., need for differentiating between, 185
Consumers' difficulties in securing Pure Milk Supply, 421
Consumption, *see also* Pulmonary *do.*
  Birmingham and, 323
  Compulsory Notification of, in Norway (Holmboe), 89
  Prevention of, in reference to Steamship passengers, 236
Consumptives, (*see* London *do.*), Sanatoria for, Royal Commission suggested (Kelynack), 784
Contamination of Meat, circular to Tottenham butchers (Butler-Hogan), 800
  of Milk under ordinary circumstances Bacteriologically proven, 439
Contribution, A, to the study of the Vital and other Statistics of the Jews in the United Kingdom, *abst.*, 766
Control, The Municipal, of Zymotic Disease, H. Wilkinson, 343
Conviction for Selling Mussels unfit for Food, Southend, 266
Co-operative Dairying in England, H. C. Fairfax-Cholmeley, *abst.*, 761
  Actual working of, (at the Skelldale Dairy), 761
  Butter-making, probable abandonment of, 761
  List of Co-operative Dairy, Milk, Butter-, and Cheese-making Societies, 764-5
Cope, A. E., Vaccination Expenses Committee, *letter* 542
Copenhagen Conference, views of, on Instruction in Hygiene, 210
Correspondence, 59, 109, 328, 469, 541, 794
Corridors, their drawbacks, 170 *et seq.*
Cost in relation to Housing of Working Classes, 750, 753, 755
Cottages, country, lack of, and difficulties connected with, 203, 279-80
  Labourers' requirements in, Garstang, 753
Cotteswold Hills, Western Slopes of the, the Distribution of Cancer, Phthisis, and Pneumonia on, An Inquiry into, J. M. Martin, *tables* and *charts*, 4
County M.O.H., *ed.* 619
  in relation to the Midwives Act, 1902., 560-1
  and Private Practice, Scotland, question *re* in Parliament, 538
  for Somerset, appointment of, 535
 Medical Officerships, 206
 of Nottingham, *see* Nottingham
Counties having Female Inspectors of Midwives, 586
 without County M.O.H., 422
Country, the, The Return to (of Manufacturers), ("Times"), 533
 life, need for rendering more attractive, 279
Cows, best kept in the open, McCleary on, 420, Sadler on, (adverse), 428, Rayment on, (adverse), 429
 dirtiness of, and consequences to Milk Supply, Rayment on, 429, Laird on, 439
 Immunized, effect of Feeding, with Milk from (Jemma), 640
 Washing of, Mammitis ascribed to, by farmers, 443
Cows, Goats, and Rabbits, Milk of, Immunized against Tuberculosis (Figari), 765
Cows' Teats, Ulcers on, An Outbreak of Diphtheria (at Leith), traceable to, W. Robertson (*ill.*), 246
Cowsheds, insanitary, Laird on, *ill.*, 438 *et seq.*
 in relation to pure Milk, McCleary on, 420
Cow-pox, attitude of the Northern dairyman towards, 249
 and other Teat eruptions, in relation to Epidemic Sore Throat, 773
Cox, Mr., on Reform of Milk Supply, in relation to Cost, 433
Craik, Sir H., in discussion on Hygiene in Universities, etc., 214
Cranial capacity, in relation to Physical and Mental Conditions, 303
Craven, M., in discussion on Hygiene in Universities, etc., 220
Criminals, Alcoholism Among, 304
 Small size and excessive weight of the skulls of, 303
Criticism, A, of the Sale of Whisky Bill, 1905., J. R. Currie, 607
Criticisms, Some, (on modern Bacteriology and Medical faddism), F. G. Crookshank, 692
Crookshank, F. G., The Leicester Method of dealing with Small-pox, *letter*, 61, Some Criticisms, 692
Croup, *see* Membranous *do.*
Cubicle System, the, of Treating Infectious Disease, The Results of (Paris Pasteur Inst.), 407

Cullingworth, Dr., on the Midwives Act, 1902., 574
Current Public Health Literature (*see also* separate Index), 71, 122, 268, xiii *following* 202, 413, 477, 551, 743, 801
Currie, J. B., A Criticism on the Sale of Whisky Bill, 1905., 607
Cutler, T. W., Speech at Annual Dinner, 119
Cyllin as an inhalant, An Aid in the Treatment of Tuberculosis, W. C. Lodwidge, *letter*, 103

"D.P.H.," Duties of M.O.H., under Education Act, *letter*, 542
Dairy Farmer, the, conservatism of, 428, 439
  premises, repairs of, Sadler on, 428-9
  Products, *see* Meat and
Dairying, Co-operative, in England, H. C. Fairfax-Cholmeley, *abst.*, 761
Dangers of Faultily-Constructed Milk-Shops, W. Robertson (*plans*), 445
    Communication between dwelling and shop, instances of, 445-7, 448
    Legal difficulties concerning, 443 *et seq.*
  of Paper Money (Hurty, U.S.A.) 47
Davies, Col. A. M , on Hygiene teaching in the Army, 221
  E., A Retrospect (of the Sanitary Condition of Swansea), 76
    on the Housing question at Swansea, 533
  S., on Reform of Milk Supply, 433
Day Schools, Medical Inspection in, J. B. Wilkinson, 225, 235, discussion, 235
Dearden, W. F., The Municipal Treatment of Physical Deterioration, 237, 245, discussion, 243
Death Certification, J. W. Hayward, *letter*, 795
Death-rate (s), from Cerebral Hæmorrhage in Bath, 605
  from Scarlet Fever, 1903., in England and Wales, 378
  in Glasgow, in one-roomed tenements, 308
  Jewish, United Kingdom, 766, 767
  of Manchester, decline in, 238-9
  in Rural Districts in the County of Nottingham, higher than the Urban Rates, H. Handford, 769
  Urban and Rural, decline in, compared, 295, deductions, 296, 309
  from Tubercular diseases, England, Wales, and London, 784
Deaths, *see also* Infant Mortality
  Abbott, Dr. S. W., U.S.A., 408
  Blaxall, Dr. F. H., 313
  Finsen, Prof., of Copenhagen, 51
  Gresswell, Dr. D. A., 313
  Mansergh, James, 681
Deaths (*continued*)—
  Russell, Dr. J. B., 102
  Tidman, E., 273
  Wallace, Dr. James, 104
  during School age, some causes, 234-5
Decrease of our Population, the supposed Deterioration and, in relation to Overcrowding in Houses, H. G. Armstrong, *table*, 301
  in the Population of Small Towns (Anderson), 733
Defective Sight and other defects in School children, 276
Defries, W., in Discussion on Physical Degeneration, 290
Degeneration, *see* Physical *do.*, *and* Physical Deterioration
Delépine, S., The Causes of the Increase of Agricultural Anthrax in Great Britain, *tables*, 491, 524, discussion, 517, *and charts*
Denmark, (*see also* Copenhagen), Importation of Pork from, regulations for, 464
  School Instruction in Hygiene in, 213
  Sterilization of Milk in, 430
Deputation of I.S.M.O.H. to the Metropolitan Asylums Board *re* Sanatoria for London Consumptives, 534
  to the President L.G.B., on Vagrancy and the spread of Infectious Disease, 669
Derby, County of, (*see also* Clowne), Small-pox in (1903) due to Tramps, 224
Desquamation, question of Infection from, Anderson on, 369, Lauder's action concerning, 657
Destructors and Electricity, F. Livatson, *letter*, 469
Deterioration (*see also* Physical *do.*), Supposed, and Decrease of our Population, in relation to Overcrowding in Houses, H. G. Armstrong, *table*, 301
  How is it to be Estimated, 304
  or otherwise, of the Population, Indications of, 303
Determination of Nitrites in Waters, W. P. Mason, 714
Determining Carbon Dioxide in the Air, A Comparison of Simple Methods of, (Lauenstein), 43
Dewsbury, Small-pox at, views of the L.G.B. on, 51
Diagnosis of the early stages of Pulmonary Consumption, importance of, J. E. Squire, 40
  in Cases for Isolation Hospitals, precautions taken at Monsall, Gordon on, 387
  of Tuberculosis, Aids to (Marzagalli and Holmgren), 408
Diagnostic difficulties in regard to Scarlet Fever, Willoughby on, 375 *et seq.*, 383, Fraser on, 382

Diarrhœa, due to Horse manure, Delépine *cited* on, 685-6
  in relation to Flies, 711-12
  Mortality, Infant, reduction of at Preston, 291
    in Swansea, 80
  Summer, the Epidemiology and the Prevention of, J. T. C. Nash, *letter*, 794
  Zymotic, or Zymotic Enteritis, 354, probable causes of, 355
Diarrhœa and Typhoid, The Influence in, of Privy-Middens and Water-Closets, A. W. Martin, *tables*, 709
Difficulties in dealing with Milk Adulteration (abst. of Report of the Board of Agriculture for 1903), *table*, 86
Digestion and Health, The Influence of Boric Acid and Borax on, (Wiley's Report, U.S.A.), 41
Diphtheria, (*see also* Bacteria *and* Pseudo-diphtheria), H. Renney, 704, discussion, 708
  Aerial dissemination of, 707
  benefits of Antitoxic Serum in, Berry on, 653-4
  extending prevalence of, among School children, 227-8, 235
  Municipal responsibility concerning, 347
  Outbreak of, (at Leith), traceable to Ulcers on Cows' Teats, W. Robertson (*ill.*), 246
  Post-Scarlatinal in Isolation Hospital, 362, cause of, 384, Bacteriological Examination for, at Monsall, Gordon on, 388
  Quarantine, Rules for, in Iowa, U.S.A., 236
  in a School, cause of, 697-8
  Schools and school dust as disseminators of, 704-5, 706
    precautions advisable in, 708
    Sunderland precautions *re*, 666
    treatment of, Blair on, 654
Diphtheria, and Cow Teats, Bacteriology of the Outbreak, 249
  and Measles, conjoint cases of, Sweden (Hellström), 651
Discharges in Scarlet Fever Patients, Treatment of, W. McCallin, 757
Disease(s), (*see also* Zymotic *do.*), communications of, damages recoverable for, 417-8
  Official Classification of, in Germany, (Prussia), 75
  prevention of, 208
Disinfectants, Standardization of, War Office conditions *re*, 490
Disinfection, articles concealed from, or overlooked, as sources of infection, 360, 372
  of School-books and of School-rooms, U.S.A., 62, 622
  in Typhoid. thoroughness indispensable in, 353
Displacement, in relation to Housing Working Classes, 533
Disposal of Anthrax-Infected Carcases, Board of Agriculture regulations *re*, 525
Distillation, *see* Sale of Whisky Bill, 1905
Distribution, the, of Cancer, Phthisis, and Pneumonia on the Western Slopes of the Cotteswold Hills, J. M. Martin, *tables*, and *charts*, 4
Doctors as Instructors in Hygiene in Schools, etc., 211, 220, 222
Dodd, L., on Reform of Milk Supply, 432
Do Infant Schools Improve the Mental and Physical Condition of the children? D. Jackson, 311
Doll, C. Fitzroy, on the Presidential Address, Public Health and Architecture, 113
Domestic Training, Scottish School Boards' Methods, 286-7
Drainage Improvements, Manchester, 242
Draught Prevention in Churches and Lofty Halls (Rietschel), 540
Dried Milk, J. Priestley, 251, J. Robertson, *letter*, 328
  American and home trials of, 252
  Bacteriological results of Experiments with, 252-3
Dry-rot, Pugging as a cause of, (Nussbaum), 601
Dudley, Scarlet Fever measures employed in, 349
Duncan, Mr., on the Midwives Act, 1902., 579, 581
Dunne, A. B., *cited* on Typhoid spread by Flies in S. Africa, 713
Dust caused by Motors, and the Public Health, *see* Discussion, 687 *et seq.*
  as disease spreader, Anders on, 778
  from Privy Middens as cause of Diarrhœa, Diphtheria, etc., 709
  of Schoolrooms, in the spread of Diphtheria, 705
Duties of M.O.H., under Education Act, *letter*, "D.P.H.," 542
  of School Medical Officers, School Sanitation, and, A. Greenwood, *table*, 641
Dwellings, primitive types of, 131 *et seq.*
Dyer, B., T. S. Dymond, and J. C. Thresh, The Effect of the Weather upon the quality of Milk, and the Use of Preservatives, 458
Dymond, T. S., joint-author, *see* Dyer

EARLY (diagnosis of) Pulmonary Consumption, J. E. Squire, *tables*, 40
East Ham, experimental use of Dried Milk at, and results, 252
Eastbourne, Scarlet Fever cases in, not Hospital Isolated, and others so dealt with, 375 *et seq.*

Eastern Counties Dairy Farmers' Co-operative Society, methods of 761, 763-4

Editorials,
  The battle of the Standards (of Ventilation), 1
  County M.O.H., 619
  Fo'c's'le Accommodation in the Mercantile Marine, 73
  The London County Council and the Public Heath, 555, Note on, 622
  Magistrates and the Public Health Acts, 487
  The Position of M.O.H., 489
  The Public Health Act, 1904., 74
  Rural Housing and Rural Byelaws, 203
  The Virulence of Pseudo Diphtheria Bacilli, 271

Education, (*see also* Physical *do.*), over-estimation of, in relation to Hygienic Improvement, McCleary on, 421
  of the Working Classes, 318, its errors, 319

Education Act, Duties of M.O.H. under, *letter*, "D.P.H.," 542

Effect of Alcohol on School Children, T. A. Macnicholl, 774
  as shown by Statistics, of British Statutory Regulations directed to the Improvement of the Hygienic Conditions of Industrial Occupations, L. Ward, 771
    (*a*) on Mortality rate, 771-2
    (*b*) on Sickness experience, 771-2
    (*c*) on Physique of Operatives, 771-2
  The, of the Weather upon the Quality of Milk, and the use of Preservatives, B. Dyer, T. S. Dymond, and J. C. Thresh, 458

Egyptian dwellings, 134, 140-1

Elberfeld, efforts at, to combat physical Deterioration, Niven on, 243-4

Electrical Accumulator, chronic Poisoning in a man in charge of, McWalter on, 328

Electricity, Destructors and, F. Livatson, *letter*, 469

Emission of Smoke from Chimneys, laws concerning in Foreign countries, 582

Employment of Children Act, 1903., (Thomas), 787

Enclosed courts, dangers of, 154 *et seq.*

England, Co-operative Dairying in, H. C. Fairfax-Cholmeley, *abst.*, 761

England and Wales, (*see also* Great Britain, *and* United Kingdom), Analysts' Reports on the Milk, Butter, and Cheese dealt with, 1901-3., inclusive, *table*, 86
  Scarlet Fever Incidence and Death-rate in, for 1903., 378
  towns in, employing Women Health Visitors, 780-1

English House, the evolution of, 136-7, 142-3 *et seq.*
  standard of comfort, increase of, 299

Enhancement of Infection Resisting Power, (Miyake's experiments), 391

Enteric Fever and Ice Creams, Govan cases, 224
  Outbreaks in Swansea, 1879 and 1885., 79
  Oysters and Shakespeare, 103
  rarity of, in Newcastle-on-tyne, 302

Epidemic Catarrah Icterus, in Norway, (Nicolaysen), 67
  An, of Sore Throat, A. Robb, 773

Epidemics in Swansea, 1863-73., 79

Epidemiology, the, and The Prevention of Summer Diarrhœa, J. T. C. Nash, *letter*, 794

Error, A Possible Source of, in Fat Determinations by Extraction Methods, (Barthel), 85

Erysipelas and its alleged affinity for Scarlet Fever, 697
  Municipal Responsibility concerning, 318

Essex, *see* East Ham, *and* Ilford

Estimation of Carbon Monoxide, (Lévy and Pécoul), 391

Evans, A., on Anthrax, Human and Bovine, 520
  seconding Newsholme's proposal for formation of Committee on Hygiene Teaching, 223

Ewing, Dr., on Leucorrhœa as a cause of secondary Scarlet fever cases, 372

Examination, *see* Bacterioscopic *do.*

Example *versus* Precept, *see* 221, 243

Exclusion of Infants from Schools, *see under* Infant Schools
  of unfit as well as Infectious children from Day Schools, 227-8

Expectation of Life, Jewish, United Kingdom, 767, 768

Experimental Measles, L. Hektoen, *abst.*, 776

Extraction Methods of Fat Determinations, A Possible Source of Error in, (Barthel), 85

Eyesight and Hearing of School children, supervision of, 649

FACTORIES, The use of water Gas and other Gases in; Carbonic Oxide poisoning, A. Whitelegge, 82

Factory and Workshop Act, Overtime regulations under, for women, 250

Fainting among School Girls, Clowne, Derbyshire, 664

Fairfax-Cholmeley, H. C., *see* Cholmeley, H. C. Fairfax-

Fat Determinations by Extraction Methods, A possible Source of Error in, (Barthel), 85

Faultily-constructed Milk Shops, the Dangers of, W. Robertson, (*plans*), 445

Feeding of Infants, and of School Children, *see* Infants *and* School Children
Fees for attendance at Isolation Hospitals, L.G.B. statement on, 732
Female Sanitary Inspectors, (Coutts), 780
Filth as a nidus for Typhoid germs, 710
Finland and Sweden, Organization, Inspection, and the Milk-Supply in, 430
Finsen, Prof., of Copenhagen, death of, 51
Fireplaces, value of as ventilators, 163
Firth and Horrocks, Majors, on Flies as spreaders of Typhoid, 713-14
Fitzsimmons, J. B., The influence of Hospital Isolation on Scarlet Fever in Hereford, *tables*, 392
Flat-dwellers, dislike of, for fresh air, 157
Flats, Back to back, objections to, 180 *et seq.*
  balconies as means of access to, 177
  M.O.H.'s certificate in connection with, 182-5
  present-day predominance of, and essentials of construction in, 167 *et seq.*
  staircases in, legal points concerning, 182-3
  ventilation of, 180 *et seq.*
Fleas, as agents in conveying Typhus Infection, (Hay), 535
Flies as disseminators of Typhoid, 712-14
  in relation to Diarrhœa, 711-12
  Transmission of Tuberculosis through, (Hayward), 418
Floors and Flooring,
  cleaning of in schools, Greenwood on, 644
  in Dairies, 762
  in Isolation Hospitals, desiderata in, Gordon on, 385
Food, (*see also* Meat *and* Milk), cheapness of, in relation to Public Health, 299
  Infected, the Liability of Vendors of, C. E. Allan, 415
  as a source of Plague, 783
  for Mothers, Rowntree *cited* on, 316
  Vaccine Lymph Calves as, 732
Food-Preservatives, Effect of, on Health, Wiley's experiments on, U.S.A., 92
Fo'c's'le Accommodation in the Mercantile Marine, *ed.*, 73
Forks for Customers' examination of Meat, circular *re*, to Tottenham butchers, (Butler-Hogan), 800
Formaldehyde in disinfection of Schoolrooms, U.S.A., 622
Formalin. The Action of, on Milk and Rennet, E. Löwenstein, *tables*, 453
  effect of, on Anthrax Spores, 273
  spraying in Scarlet Fever wards, Anderson on, 370
Formalined Milk, epidemic Skin disease attributed to, 457
Fosbroke, G. H., The Midwives Act, 1902., 557, 581, discussion, 574
Fowls, Tuberculosis of, (Weber and Bofinger), 691
France, (*see also* Paris), Hygienic Regulations for Post Offices in, 273
  Industrial Employment of various Gases in, 601
  names in, for flat and rooms, respectively, 167
  present-day cave-dwellers in, 135
  prevention of Small-pox in, 729
  School Instruction in Hygiene in, 213
Fraser, Dr., on Value of Scarlet Fever Isolation Hospitals, 382
French, W., on Motoring, the Dust question, and Public Health, 689
Frost *v.* Aylesbury Dairy Co., bearings of the case discussed, 415
Fumigating Ships, Producer Gas for, Nocht and Giemsa's experiments, 779
Fungi, *see* Hyphomycetes

GARSTANG, T. W. H., The application of the Housing of the Working Classes Acts in Rural Districts, 747, 756, discussion, 756
  on the Midwives Act, 1902, in relation to the Medical profession, 592
  on progress towards a Pure Milk supply, 443
  proposing vote of thanks for Dr. Wilkinson's paper, 235
Gases (*see also* Producer *and* Water Gas), Various, Industrial Employment of (France), 601
Gas-Producing Plant, Nuisance from, J.P., *letter*, 795
"Gassing," Dangers of, precautions requisite, and treatment essential for, 84
Gayton, Dr., views of, adverse to Hospital Isolation, *cited*, 360
Germany, *see* Elberfeld, Isar River, Koch, *and* Prussia
  Milk Depôts in, Dr. von Ohlen, *tables*, 655
    Halle, 658
    Hamburg, 655
    Linden in Hanover, 659
    Magdeburg, 659
    Posen, 659
    Stettin, 660
    Strassburg, 660
    Stuttgart, 661
  and the Prevention of Small-pox, 727, 728, 729
  regulation of density of buildings in and around cities, 152
  views in, on Antityphoid Inoculation, 666
Giffen, R., *cited*, on the wage and expenses of the modern Working-man, 296-7

Glanders, Acute, in man, (Bucalogli and Stoicescu), 735
Glands, in Plague Patients, always found affected (Elliott), 782
Glasgow, Death rate in from Pulmonary Tuberculosis in one, two, and other roomed tenements, 308
  Small-pox in, and prevention of, Lord Provost on, 727
Glasgow Corporation, "Family Home" of, 165
Gloucestershire, (*see* Cotteswold Hills), Education Committee, action of as to Partial Closure of Schools, 664, *do.* as to Schools and Infectious Diseases, 665
Glover, Dr., on Small-pox in Leicester and Dr. Millard's views, 727
Goats, *see* Milk of Cows and
Goole, *see* West Riding
Gordon, A. K., Some Practical Points in the Management of an Isolation Hospital, 384
Gorst, Sir J., on Physical Degeneration and the better state of Jewish and Irish poor children, 234-5
Gorton District, Diarrhœa in, in Privy-midden and Water-closet houses, *tables*, 710, 711
Govan, Enteric Fever outbreak at, due to ice creams, 224
Grain Whisky, *see* Sale of Whisky Bill
Grantham, Mr. Justice, and the Chailey R.D.C., 203, 754
Great Britain, Anthrax in, in 1905., 525
  The causes of the Increase of Agricultural Anthrax in, S. Delépine, *tables* and *charts*, 491, 524, discussion, 517
Greenwood, A., School Sanitation, and the duties of School Medical Officers, *table*, 641
  on the Midwives Act, 1902., and reports of M.O.H. in relation to it, 591
  on Washing of Cows, 443
Gresswell, Dr. D. A., death of, 313
Groves, J., retiring President, on the induction of his successor, Dr. Sykes, 104
  moving Vote of Thanks to Bodies and persons entertaining the Society, 113
  supporting Newsholme's proposal for formation of Committee on Hygiene Teaching, 223
  on value of Isolation Hospitals in Scarlet Fever, 381

HALDANE, J. S., Standards of Ventilation, 32, Editorial comment, 1
Hall, Dr on Motoring and Public Health, 689
Halle, Milk Depôts at, 658
Halls, *see* Churches and Lofty Halls
Hamburg, Harbour of, Experiments in, of Nocht and Giemsa, with Producer Gas for Fumigating Ships, 779
Hamburg, Milk Depôts in, 655
Hamilton, Dr. Alice, *cited* on Pseudo-Diphtheria Bacilli, 271, 272
Hand Feeding of Infants, 668
Hand Sterilization, Oil of Cloves for, (Webster), 654
Handford, H., Death Rates in Rural Districts in the County of Nottingham, higher than the Urban Rates, 769
  The Sufficiency of Isolation Hospitals, 397
Hands, disinfection of, in Nurses, importance of, 371, 385-6, *do.* in Patients, 369
Harris, A. W., *cited* on Exclusion of Infants from Schools, 730
  J. A., on delinquencies of Rural Landowners as to Housing of Cottages, 756
  N., on Reform of Milk Supply, 429
Hayward, J. W., Certification of Death, *letter*, 795
Health, (*see also* Digestion and), Effect of Food Preservatives on, Wiley's experiments concerning, U.S.A., 92
  Department, A, The Staff of, (Hewlett), 733
  Resorts, Overcrowding at, E. Carnell, *letter*, 470, *see also* 318
  Visitors, Women, good results of their work, 221, 242, towns employing in England and Wales, 780-1
Hearing of School Children, testing of, 649-50
Hembrough, J. W., on the Midwives Act, 1902., in Northumberland, 576
Hereford, Scarlet Fever in, The Influence of Hospital Isolation on, J. B. Fitzsimmons, *tables*, 392
  Workmen's dwellings, at, Cost and Rent of, Herbt. Jones on, 532
Herefordshire County Council, appointment by, of a Nurse as executive officer under the Midwives Act, 734
Heron, G. A., Instruction in Hygiene in Universities and Schools, 207, 222, discussion, 214
Hewitt, C. B., on Motoring and Public Health, 688
Highland Schools, Insanitary, 666
Hill, G. E., Infant Mortality, *tables*, 623
Holiday Resorts, Overcrowding in, 318, *see also* 470
Holland, Importation of Pork from, regulations for, 464
Home Isolation, Blair on, 654
  Life, endangered by modern cheap building, 178
  versus Farm contamination of Milk, Newsholme's views *cited*, 420, 435, 422
  Work Order, new Draft, 768
Homes and School-Children, 228-9

Horrocks, and Firth, Majors, on Flies as Spreaders of Typhoid, 713-14
Horse Manure, Diseases due to, 685
Horses, Course of Anthrax in, 511
Hospital(s), *see also* Isolation Hospitals
  Complications and Return Cases in Scarlet Fever, Some Points in the Prevention of, A. Anderson, 365, 372, discussion, 372
  Isolation, W. Scatterty, 356; A correction by the same, (*letter*), 341
    campaign against, those leading, 356 *et seq.*, those opposing, *ib.*
    extra Severity, (alleged), of Infection by returned patients, 359
    overcrowding in, and its dangers, 358-9, 360 *et seq.*
    results of, too much anticipated from, 356
    return cases in relation to, 357, compared with those in private houses, 358, some causes of, 358, infrequency of in fact. 360
    some cardinal defects in administration in, 361
    some indictments of, discussed (*see* Return Cases), 360, 362
Hospital Isolation, The Influence of, upon Scarlet Fever, C. K. Millard, *letter*, (*table*), 59; A correction by the same, (*letter*), 407
  of Scarlet Fever, Municipal Responsibility concerning, 348
  Pros and Cons of, Anderson on, 365 *et seq.*
  Influence of, on Scarlet Fever in Hereford, J. B. Fitzsimmons, (*tables*), 392
  for Scarlet Fever, The Value of, G. Willoughby, 373, 383, discussion, 381
Hot Weather and Diarrhœa, 711
House of Commons, the Ventilation of, 462
House(s) Elementary of the Historical period, 138
  English, the Evolution of, 136-7, 142-3
  Overcrowding in, The Supposed Deterioration and Decrease of our Population in relation to H. E. Armstrong, *table*, 301
  Timber, peoples employing, 138
Housing, (*see also* Rural *do.*), importance of, to Health, 279
  Question, The, (*see also* Public Health Acts Amendment Bill), in relation to Racial Deterioration, 306
Housing of the Working Classes Acts, Action of the Merthyr District Council under, D. J. Thomas, *plans*, 526, 533, discussion, 532
    The Application of, in Rural Districts, T. W. H. Garstang, 747, 756, discussion, 756
    1890-1903., L.G.B. Order concerning, 310, powers of the said Board concerning, 468
Housing of the Working Classes, efforts in Manchester concerning, 240-1
Housley, J., on difficulties in diagnosis of Scarlet Fever, 372
Howard Medal Prize Essay, *see* Ward, L.
Hull Board of Guardians, and the payment of Medical Men called in by Midwives, 734
Human Milk as a source of Tubercular Infection, 354
Hunting, W., on Anthrax, and infected Oats and Cake, 521-2
Huts and Cabins, German, Etruscan, and Gallic, 134
Hydrogen Compounds, Poisoning by, in Workshops, *letter*, J. C. McWalter, 328
Hygiene, (*see also* School *do.*), the Ideals of, 130
  Instruction in, in Universities and Schools.—A Proposal, G. A. Heron, 207, 222, discussion, 214
  Lectures on, to Teachers, Manchester, (Ritchie's), 787
  Motors and, ("Lancet"), 729
Hygienic Conditions, the, of Industrial Occupations. The Effect, as shown by Statistics, of British Statutory Regulations directed to the Improvement of, L. Ward, 771
  Regulations for French Post Offices, 273
Hyphomycetes, Pathogenic Importance of, (Schilling), 94

ICE Creams, Enteric Fever and, Govan cases, 224
Icterus, Epidemic Catarrhal, in Norway, (Nicolaysen), 67
Ideals, the, of Hygiene, 130
Idris, Alderman, T., speech at Annual Dinner, on the work of Municipalities in London, 115
Ilford, Experiments at, with Dried Milk, 252
Illiterate persons, large numbers of, still found, 309
Illumination, impurities in enclosed places due to, 34
Immunization of Milk of Cows, Goats, and Rabbits against Tuberculosis, (Figari), 765
Immunized Cows, Milk from, Effect of Feeding with, (Jemma), 640
Importation of Pork from Denmark and Holland, regulations for, 464
Improved Method, An, of Calculating Birth-rates (Newsholme and Stevenson), 770
Improvement of the Hygienic Conditions of Industrial Occupations, The effect, as shown by Statistics, of British Statutory Regulations directed to the, L. Ward, 771
Impurities in the air of enclosed places, due to Illumination, 34

Incorporated Society of M.O.H.:—
- Accounts, 68-9
- Alterations, proposed, to Articles of Association, recommendations of Parliamentary Committee *re*, 544-5
- Annual Dinner, 114
- Annual Reports, 63, 105
  - of Council, 63
  - of Editor, 66
  - of Hon. Treasurer, 66
- Annual Meetings, *see* Meetings, *infra*
- Balance Sheet, 70
- Committee on Teaching of Hygiene appointed, 543
- Correspondence, 197
  - Thanks of Sir S. Murphy for the Society's congratulations, 409
- Deputations from, to Metropolitan Asylums Board, *re* Sanatoria for London Consumptives, 534
- Discussions, 199, 740
- Eastern Counties Branch, construction of, announced, 105
- Elections of Fellows, Members, and Associates, 112-13, 199, 335-6, 409, 547, 739
- Gift by Sir Shirley Murphy acknowledged, 544
- Meetings, Annual, 104, 739
  - General, 197, 334, 409, 543
  - Provincial, 739
- Nominations, 547, 740
- Papers read before, 199, 274-92, 336, 410, 543, 547
- President (Dr. Sykes), induction of 104
- Presidential Address, 113, 129
- Proceedings, 63, 104, 114, 197, 234, 409, 543, 739
- Reports, (*see also* Annual *Do.*), of Council, 105, 197, 334, 544
- Resolutions,
  - *re* Hygiene Supervision of Schools, 410
  - in favour of the Proposed National league for Physical Education and Improvement, 292
  - *re* Suggested Federation of Medical Societies, 547
  - *re* Teaching of Hygiene in Schools, 199
- Visits paid by, 739, 741
- Vote(s) of congratulation to Sir Shirley Murphy, 197
  - of thanks to Entertainers of the Society, 113
    - to the Mayor of Lancaster and others, 740, 742
    - for Papers, 224
    - for Presidential Address, 113
- EASTERN Counties Branch, 105:—
  - Discussion, 800
  - Elections of President and Officers, 800
  - Meetings, ordinary, 742, 800
  - Papers read before, 742, 800
  - Presidential Address, 742

EASTERN COUNTIES BRANCH (*continued*)—
  - Proceedings, 742, 800
  - Visits paid by, 742, 800
- METROPOLITAN Branch:—
  - Annual Dinner, Sir S. and Lady Murphy as the guests of the evening, 337
  - Annual Report of, 796-9
  - Deputation from, to Metropolitan Association Board *re* Sanatoria for London Consumpatives, 548, *see also* 534
  - Discussion on Dual Control in Schools, Factories, and Workshops, and resolution, 549
  - On Exclusion of Children from School, 799
  - Election of President, Officers and Representatives, 410, 799
  - Meetings, Ordinary, 200, 410, 548, 796
  - Papers read before, 200
  - Proceedings, 200, 337, 410, 548, 796
  - Recommendations of, *re* Proposed Alterations to Articles of Association, 548-9
  - Resolutions,
    - *re* Dual Control in Schools, Factories, and Workshops, 549
    - *re* London County Council General Powers Bill, 1905., 410
    - *re* Revenue Act, 1903., 410-11
    - *re* Shop Hours Act, 200, 410
    - *re* Vote of Money to Mr. Ken 410
- MIDLAND Branch:—
  - Alterations in Articles of Association, 336
  - Meeting, Ordinary, 336
  - Proceedings, 336
  - Resolution *re* definition of Drain and Sewer, 336
  - Unofficial Agents for obtaining Samples of Food and Drugs), remarks on, 337
- NORTHERN Branch:—
  - Annual Dinner, 475
  - Discussion, 475, 742
  - Election of Officers, 337
    - of President and Representatives, 796
  - Meetings, Annual, 337
    - Ordinary, 475, 742, 796
  - Papers read before, 337, 475, 742
  - Presidential Address, 475
  - Proceedings, 337, 475, 742, 796
  - Resolution *re* exclusion of Infants under five from School, 742
  - Visits paid by, 796
- NORTH-WESTERN Branch:—
  - Annual Dinner, 201
  - Communications to, 618
  - Discussions, 682, 796
    - on Adulteration of Pearl Barley, 411
    - on the Declining Birth-rate, 475
    - on Dr. Laird's paper on "A Pure Milk Supply," 412

- NORTH-WESTERN BRANCH (*continued*)—
  - Meetings, Ordinary, 201, 267, 411, 475, 549, 618, 682, 796
  - Papers read before, 201, 202, 267, 412, 475, 550, 6 8, 682, 796
  - Proceedings, 201, 267, 411-12, 475, 549, 618, 682, 796
  - Resolutions,
  - *re* Articles of Association, 412
  - *re* Security of Tenure for Medical Officers of Health, 519
- SCOTTISH Branch :—
  - Election of Officers, 476
  - Meetings, Ordinary, 476, 550
  - Papers read before,
    - Hay's, on Typhus Fever in Aberdeen, 476
    - Sinclair's, on Deaths of Newly-born Children, 550
  - Proceedings, 476, 550
- SOUTHERN Branch :—
  - Discussion, 550
  - Election of President and Officers, 796
  - Induction of President, 202
  - Meetings, Ordinary, 202, 337, 550, 796
  - Papers read before, 202, 337, 550
  - Proceedings, 202, 337, 550, 796
  - Resolution *re* Proposed Alterations in Articles of Association, 550
  - Visits paid by, 202, 550, 776
- WEST OF ENGLAND AND SOUTH WALES Branch :—
  - Discussion, 476
  - Election of Officers, 202
  - Induction of President, 202
  - Meetings, Ordinary, 202, 476
  - Papers read before, 202, 476
  - Proceedings, 202, 476
  - Visits paid by, 476
  - Vote of Conditional Contribution to The Library of Incorporated Society of Medical Officers of Health, 202
- YORKSHIRE Branch :—
  - Annual Report, 799
  - Discussion, 800
  - Induction of President, 201
  - Meetings, Annual, 799
    - Autumn, 200
    - Ordinary, 412, 682, 799
  - Papers read before, 201, 412, 800
  - Proceedings, 200, 412, 682, 799
  - Visits paid by, 2 0, 682
- Increase of Agricultural Anthrax in Great Britain, The Causes of, S. Delépine, *tables and charts*, 491, 524, discussion, 517
- Industrial Employment of Various Gases, (France), 601
  - Occupations, the Hygienic Conditions of, The effect, as shown by Statistics, of British Statutory Regulations directed to the Improvement of, L. Ward, 771
- Infant-feeding, 278
  - Cost of Milk for, 436
- Infant-feeding, Milk from Immunized Cows for, Effect of, (Jemma), 640
  - Preservatives in Milk objectionable for, Dyer, etc., on, 459
  - Widespread ignorance concerning, 208
- Infant Mortality, T. E. Hill, *tables*, 623
  - in Children and Cattle, Chadwick on, 244
  - Jewish, United Kingdom, 767, 768
  - Need for precise ages in Statistics concerning, 291
  - One of its Chief Causes, Sykes on, 221
  - Prevention of, Resolutions of the Conference on, 667
  - in relation to Milk Supply, Butler on, 432
  - in Swansea, 80
  - in Urban and Rural Districts compared, Armstrong on, 305
- Infant Schools, Do (they) improve the Mental and Physical Condition of the Children? D. Jackson, 311
  - Condition of the Children, 311
  - Hours of Attendance, 312
  - Medical Aspect, 312-3
  - School Buildings, 311
- Infant Schools
  - Exclusion of Children from, till older than at present, 615
    - Action taken at Sunderland, 666, and at York, 788
    - Views on, of Armstrong, 219, 308-9
      - The Board of Education, 615, 730
      - Harris, 730
      - Jackson, 312-3
      - Renney, 707
      - Symons, 666
      - Tattersall, 244
      - Teachers, 312
- Infant Schools or Nurseries? (Burnley), 310
  - Spread of Measles, etc., due to, 350-2 398
- Infantile Diarrhœa, and Domestic Sanitation, Rees on, 654
- Infection from Pencils, etc., (R. Jones), 787
  - Resisting Power, To Enhance, (Miyake's experiments), 391
  - in Schools, Prevention of, (Collingridge), 786
- Infectious diseases, and exclusion of Scholars, 227-8
  - (Ireland) Bill, 614
  - Results of the Cubicle System of Treating, (Paris Pasteur Institute), 407
  - and Schools, *see* Gloucestershire, *and* West Riding
  - in Schools, duties of Teachers concerning, 646
  - spread by Infant Schools, 312-3, 350-2, 395
  - Vagrancy and the Spread of, results of the Conference on, 669

Infectiousness, Scarlatinal, letter from H. Spalding, to the Editor, American Medical Association, on the Millard and Lauder controversy, 101
Infectivity, The, of Plague, (Elliott), 782
  of Scarlet Fever, period of, how reduced at Southampton, 758-60
Influence of Boric Acid and Borax on Digestion and Health, (Wiley, U.S.A.), 41
  of Hospital Isolation upon Scarlet Fever, C. K. Millard, *letter* (*table*), 59; *the same* in Hereford, J. B. Fitzsimmons (*table*), 392
  of Privy-Middens and Water-Closets in Diarrhœa and Typhoid, A. W. Martin, *tables*, 709
  of Tanning Process upon Anthrax Spores, (Kessler), 273
Inhalant in Tuberculosis, Cyllin as, 103
Inoculation against Typhoid, German views, 666
Inquiry, An, into the Distribution of Cancer, Phthisis, and Pneumonia on the Western Slopes of the Cotteswold Hills, J. M. Martin, *tables*, *charts*, 4
Insanitary Property and Re-housing in Liverpool, (Turton), 772
  Schools in the Highlands, 666
Inspection, (*see* Medical *do.*), of Butter, question *re* in Parliament, 538
  of Cows and Milkers, Rayment on, 429, Willoughby on, 433
  of Dairy Farms, in Finland and Sweden, 430
  essential, of Midwives' dwellings, 569
  of Institutional Laundries, 614
  Limits of the function of, Mackenzie *cited* on, 425
  versus regulation, in relation to Milk, Wheatley on, 443
  of Schools, *see* Medical *do.*
Inspectors, (*see also* Health Visitors, Women), Female Sanitary, (Coutts), 780
  of Midwives, Qualifications of, B.M.A. resolution *re*, 735
Institutional Laundries and Inspection, 614
Instruction in Hygiene in Universities and Schools. — A Proposal, G. A. Heron, 207, 222, discussion, 214
Inter-Departmental Committee, Report of, on Physical Degeneration, Sir L. Brunton, 274, 291, discussion, 284, resolution, 292
International Society for the Prevention of Tuberculosis, connection of, with Heron's proposals on School Instruction in Hygiene, 209, 213
Intra-case Infection in Isolation Hospitals, *see* Mixed Infections
Iowa, U.S.A., Diphtheria Quarantine Rules in, 236
Ireland, (*see also* Belfast, *and* United Kingdom), Infectious Diseases Bill, 614
  Poor children better cared for in, than in England, 235
  Secretary for, Memorial to, on Re-vaccination, 726
Isar river, Pollution of (Hofer), 457
Isolation Hospital(s), (*see also* Hospital Isolation), Fees for Attendance at, Local Government Board, statement on, 732
    an, Some Practical Points in the Management of, A. K. Gordon, 384
    Asepsis or surgical cleanliness in, its importance, 384
    Cross or Mixed Infection in, 384, precautions against, 386-7
    Diagnosis in, precautions to ensure precision in, 387
    Diphtheria, Post-Scarlatinal in, 384, Bacteriological examination for, 338, and other cases, 389
    Flooring, of, desiderata in, 385
    Medical Staff of, necessity for paying well, 390
    Staff Infection, precautions requisite *re*, 385
    Segregation of individual cases in, a desideratum, Anderson and others on, 367, 387-8, 397
    Training of Nurses for, importance of, 389
  for Scarlet Fever
    Allegations against, 374
      controverting arguments, *ib. et seq.*
    Cost of, to ratepayers, 374
    Sufficiency of, H. Handford, 397
Isolation of individuals (segregation) in Isolation Hospitals a desideratum, Anderson, *citing* Parkes, 367
  within Hospitals, in separate Wards, 760
Izal, as a Disinfectant for Scarlet Fever, Anderson on, 363 *do.*
  do. for Typhoid Excreta, Gordon on, 386

JACKSON, D., Do Infant Schools improve the Mental and Physical Condition of the Children? 311
Japan, Army of, immunity of, from disease, cause assigned for, 696, and precautions in, against Typhoid, 682
  Beri-beri in, due to Carbon Dioxide from Charcoal Braziers, 383
Jenkins, J. W., on the "lodger" difficulty in Mining districts, 532
Jews, the, in the United Kingdom, Vital and other Statistics of, A Contribution to the Study of, *abst.*, 766
    Expectation of Life amongst, 767, 768

- Jews, Influence on, of Continental immigration, 766-7
  - Marriage-rate, 767, 768
  - Total Population of, in London and the United Kingdom, 767, 768
    - age and sex proportions, in, 766-7
    - distribution of numbers in London, England, Wales, Scotland, and Ireland, 767
- Jewish children, parental care of, 285, Glasgow an exception to the rule, 288; prevalence of, at, in diet of, *ib.*; Allan on, 290-1
- Jones, Herbert, on cost of Workmen's Houses, 532
  - on the Midwives Act, 1902., and on County M.O.H., 579
  - on reform of Milk supply, 430
  - seconding vote of thanks to retiring President, 104
  - speech at Annual Dinner, 121
  - J. Howard, on exclusion from School of Infants under four years old, 289
  - on the Midwives Act, 1902, in Monmouthshire, 578
  - on Workmen's Dwellings, 533
  - *cited* on the stigmata of Mental degeneration, 303

- KAYE, J. R., and Hospital Isolation, 356-7
  - on the Midwives Act, 1902, in the West Riding, 576, 581
- Keeping Property of Milk, Relation of Temperature to, (Conn., U.S.A.), 92
- Kenwood, Prof., Presentation to, 81
  - on Hygiene in Universities, etc., 220
- Kerr, Dr., on Feeding of School Children, 288-9
  - on Hygiene in Universities, etc., 217
- Kilburn, Alderman, seconding resolution *re* Prevention of Small pox, 728
- Kiln inspection in Cement Works, precautions requisite, 85
- Kinver Edge, and its Cave-dwellers of to-day, 135
- Koch, Prof. R., (*see* Nöbel Prize), retirement of, 327
  - on Tsetse Fever and its causes, 708
- Korea, Water Supplies in, 97

- LABOURER'S Cottage, requirements in, Garstang, 753
- Ladies' Health Society, Manchester, scope and good work of, 242
- Laird, A. J., A Pure Milk Supply, (*ill.*), 437, 444, discussion, 443
- Lanarkshire, Anthrax in, (Wilson's report), 534
- Lancashire, Character of Midwives now in practice in, 586-7
- Lauder, Dr., on his methods of treating Scarlet Fever in Isolation Hospitals, 381
  - *cited* on Classification and Segregation of Isolation Hospital Patients, Southampton, 397
- Laundries, Institutional, and Inspection, 614
- Lead Poisoning, Yorkshire Water Supplies in relation to, (Kaye), 50
- Lectures to Teachers, on Hygiene, Manchester, (Ritchie's), 787
- **Law Reports:**
  - House of Lords:
    - Brintons, Ltd. *v.* Turvey, 538
      - Industrial Anthrax regarded as an Accident—Workmen's Compensation Act.
  - High Court of Justice (Eng. & Wales):
    - Court of Appeal:
      - Bradford *v.* Mayor of Eastbourne, 254
      - Frost *v.* Aylesbury Dairy Co., Ltd., 465
        - Infected milk—sale of—breach of warranty—damages (*see also* p. 260)
      - Hardicke *v.* Friern Barnet Urban District Council, 254
        - Public Health Act, 1875., Sec. 41, and Public Health Acts Amendment Act, 1890., Sec. 19—Drain or Sewer.
      - Jackson *v.* Wimbledon Urban District Council, 736
        - Public Health Acts—drain or sewer—pipe draining into single private drain
      - Wolfenden *v.* McCulloch, 536
        - Sale of Food and Drugs Act, 1875., Sec. 6—sale of milk as taken from cow—deficiency of fat.
    - King's Bench Division:
      - Bayley *v.* Cook, 403
        - Sale of Food and Drugs Acts—milk—Analyst's certificate—standard of comparison
      - Evans *v.* Gallon & Son, 55
        - Factory and Workshop Act 1901., Sec. 101—underground bakehouse—claim by owner that certificate was not required
      - Farthing *v.* Parkinson, 52
        - Sale of Food and Drugs Acts—warranty—notice—sufficiency of
      - Firth *v.* McPhail, 670
        - Public Health Act, 1875., Secs. 116, 117, Public Health Amendment Acts 1890., Sec. 28—unsound meat—deposit for sale on premises not belonging to defendant—no exposure for sale
      - Foster *v.* Warblington Urban District Council, 399
        - Nuisance—sewage pollution—oyster beds—injunction—prescriptive right

- **Law Reports** *(continued)*—
  - King's Bench Division (*continued*)—
    - Frost *v.* Aylesbury Dairy Co., Ltd., 260
      - Infected milk—sale of—breach of warranty—damages (*see also* p. 465, Appeal Court)
    - Garlick *v.* Knottingley Urban District Council, 256
      - Public Health Act 1875, Secs. 120, 121 and 308—infected clothing—power of M.O.H. to order destruction—compensation
    - Goldstein *v.* Hollingsworth, 54
      - Factory and Workshop Act, 1901.—underground bakehouse—structural alterations—covenant by tenant to pay out-goings
    - Harris and others *v.* Scurfield, 258
      - Public Health Act, 1875., Sec. 4—drain or sewer-premises within the same curtilage—houses separately occupied
    - Hull *v.* Horsnell, 263
      - Sale of Food and Drugs Act 1875., Sec. 3—preserved peas—sulphate of copper—Analyst's certificate
    - McNair *v.* Horan, 259
      - Margarine Act, 1887., Sec. 6—package to be branded—open tub of margarine must be marked
    - Morris *v.* Beal, 95
      - Factory and Workshop Act 1901.—underground bakehouse—structural alterations—covenant to pay outgoings—jurisdiction of magistrate—lease nearly expired
    - Nathan *v.* Rouse, 402
      - Public Health (London) Act 1891., Sec. 120—nuisance from drain—cost of remedying—right to recover part from persons using drain
    - J. Richards, Ltd. *v.* Weston, 671.
      - Sale of dairy business—breach of warranty—mixing skim milk with pure milk
    - Smith *v.* Savage, 616
      - Sale of Food and Drugs Act 1875., Secs. 6, 14—cream of tartar—packets mixed by inspector—valid
    - Wanklyn and Cooper *v.* Biggs, 260
      - Libel—system of sewage purification—fair comment
    - Wincanton Rural District Council *v.* Parsons, 737
      - Public Health Act, 1875., Secs. 94, 95—nuisance, sewer or drain
  - Chancery Division:
    - Attorney-General *v.* Corporation of Dorchester, 789
      - Public Health Act, 1875., Secs. 17, 27—pollution by sewage—nuisance—sewage works—injunction

- **Law Reports** *(continued)*—
  - Chancery Division *continued*)—
    - Earl of Harrington and others *v.* Corporation of Derby, 324
      - Application for injunction to restrain pollution of river by sewage—damages
    - Jones and others *v.* Corporation of Welshpool, 265
      - Nuisance—disposal of town refuse—injunction—Public Health Acts
  - Assize Court:
    - Evans *v.* Mayor, etc. of the City of Liverpool, 673
      - Damages for injuries caused by infection—negligence—child discharged from hospital while infectious—judgment for defendants
  - County Court:
    - Action for damages for alleged false statement by sanitary inspector as to condition of a drain, 537
    - Sale of Food and Drugs Acts, 1875., Sec 6 Ginger Wine—addition of Salicylic Acid, 95
  - Sheriff Court:
    - Improperly constructed Milk-shop (Leith Dairy Regulations), 449
    - Selling milk deficient in Fat, 678
  - County Council (London):
    - Appeal under Bye-laws—size of area adjoining w.c., 327
  - Police Courts: Prosecutions for
    - adding Ferrous Sulphate to Beer, 538
    - depositing for sale Dirty and Contaminated Milk, 617
    - failure to remove House Refuse, 467
    - giving False Warranty, 677
    - importing Impoverished Milk, 467
    - selling Brandy not grape spirit, 405
      - ,, Butter containing Cocoa-nut Oil, 678
      - ,, Dried Milk deficient in Fat, 677
      - ,, Glycerine containing Arsenic, 738
      - ,, as Malt Vinegar a mixture made partly from unmalted grain, 679
      - ,, Milk containing Boric Acid—warranty, 404
      - ,, Milk deficient in Fat—straining the milk—failure to prove warranty, 678
      - ,, Mussels unfit for Food, 266
      - ,, Pork Sausages containing 105 grains Boric Acid per pound 679
    - supplying Gas containing excess of sulphur, 406
- Legge, T. N., on Anthrax, *letter* (*diag.*), 518
- Leicester Method of dealing with Small-pox, F. G. Crookshank, *letter*, 61

Leicester Small-pox Epidemic (1892), in relation to return Cases of Scarlet Fever, 357
  do. (1904), (Millard *cited* on), Glover on, 727
Leith, Outbreak of Diphtheria at, traceable to Ulcers on Cows' Teats, W. Robertson (*ill.*), 246
  Scarlet Fever Outbreak at, due to Faultily-arranged Milk-shop, Robertson on, 445 *et seq.*
Leucorrhœa, as a cause of Secondary cases of Scarlet Fever, Ewing on, 372
Levenshulme, case of Anthrax infection at, 507
Liability, The, of Vendors of Infected Food, C. E. Allan, 415
Licensing of Dairies, etc., Laird on, 440, J. B. Wilkinson on, 443
Life, and its sources, Crookshank on, 703
Life-saving at Hong-Kong—by Deputy M.O.H., 582
Lincoln, Typhoid Fever at, 1904-5., 364
  Sewage-polluted drinking water the cause of, 364
Lincolnshire, Sterilization of Milk in, 429
Linden in Hanover, Milk depôts in, 659
Lines for Study of Disease transmission, Crookshank on, 701-2
Livatson, F., Destructors and Electricity, *letter*, 469
Liverpool, Cancer Research Committee of, communication from, on the Prevention and Treatment of Cancer, 94
  Insanitary Property and Re-housing in, (Turton), 772
Loans to Local Authorities for Re-housing, 372
Lobar Pneumonia, Prophylaxis of, J. M. Anders, 777
Local Authorities, duties of, as to Buildings and Sanitation, view of the L.G.B. on, 754-5
  Jurisdiction of, in Sampling Milk, 86
  Laxity of, in enforcing Dairy Regulations, Laird on, 441
  Loans to, for Re-housing, 372
  Powers of, 48
Local Government Board attitude to the B.M.A. Public Health Bill, 732
  Deputation to, on Rural Building Byelaws, 203, *et seq.*, *do.*, 754
  do., to, on Vagrancy and the Spread of Infectious Disease, 669
  Memorial to on Re-vaccination, 726
  Order of, concerning the Housing of the Working Classes Acts, 1890-1903., 310, powers of concerning the same, 468
  requirements of, as to Air Space in Isolation Hospitals, 397
  statement of, on Fees for attendance at Isolation Hospitals, 732
  views of on the treatment of Dr. F. T. Bond by Chipping Sodbury Rural District Council, 533
Local Government Board, on duty of Local Authority as to Buildings and Sanitation, 754-5
    on Small-pox at Dewsbury, 51
    on Vaccination, 622
    on Vaccine Lymph Calves as Food, 732
  warnings of, to Lincoln on its Water Supply, 364
"Lodgers," accommodation for, in Mining Districts, Thomas and others on, 531-2
Lodwidge, W. C., An Aid (Cyllin) in the Treatment of Tuberculosis, *letter*, 103
Lombroso, *cited* on the Physical Signs of Mental Degeneration, 304
London, Consumptives of, Sanatoria for, Deputation of I.S.M.O.H. *re* to Asylums Board, 534
  Jewish population of, Vital Statistics of, 766-8
  unprotected state of, as regards infected Milk, 555-6
  Watercress of, Pollution of, Murphy's report), 556
  width, etc., of streets in, regulations for, 143 5, 146-7
London County Council, Powers of as, to Sanitation, supply of Food, and Compensation for the slaughter of Tuberculous animals, 48
  and the Public Health, *ed.*, 555, Note on, 622
Long, Mr., *see* Local Government Board
Löwenstein, E., The Action of Formalin on Milk and Rennet, (*tables*), 453
Lucifer Matches. *see* Match-workers
Lutoslawski, K., on Reform of Milk Supply, 434

McCALLIN, W., Treatment of Discharges in Scarlet Fever Patients, 757
McCleary, G. F., The Reform of the Milk Supply, 419, 433, 436, discussion, 427
McLeod, H., in discussion on Hygiene in Universities, etc., 219
Macnicholl, T. A., Effect of Alcohol on School Children, 774
McVail, J. C., in discussion on Physical Degeneration, 286
McWalter, J. C., Poisoning by Hydrogen Compounds in Workshops, *letter*, 328
Magdeburg, Milk depôts in, 659
Magistrates and the Public Health Acts, *ed.*, 487
Malpractice, etc., by Midwives, investigation of charges of, 570, *see also* 587 *and* 616
Mammitis attributed by farmers to Washing Cows, Greenwood on, 443
  Contagious, in Cows, results of, on the Milk, 444

Man, Acute Glanders in, (Bucaloghi and Stoicescu), 735
  his natural habitat, 159
  risks to, of the spread of Anthrax, 517
Management, the, of an Isolation Hospital, Some Practical Points in, A. K. Gordon, 384
Manchester Abattoir, methods pursued at, 505, 510
  Baths, Public, increasing use of, 242
  Death-rate, declining, 238-9
  Drainage improvements, 242
  Housing of the Working Classes in, 240-1
  Ladies' Health Society of, its work, 242
  Lectures at, to Teachers, on Hygiene, (Ritchie's), 787
  Municipal Treatment of Physical Deterioration in, 237 *et seq.*
  Parks and "public lungs" in, 241
  Swinton Schools for destitute children, 239
  University of, opening of its new Public Health Laboratory, 391
  Water Supply of, 242
Mansergh, James, death of, 681
Manson, Sir P., in discussion on Hygiene in Universities, *etc.*, 217
Manure-watered Vegetables as causes of Typhoid, 714
Marriage-rate, Jewish, United Kingdom, 767, 768
Marriott, Dr., adverse views of, on Hospital Isolation, 356, 363
Martin, A. W., The Influence of Privy-Middens and Water-Closets in Diarrhœa and Typhoid, *tables*, 709
  F. W., on Motoring and Public Health, 690
    on the Training of Fever Hospital Nurses, 372
  J. M., An Inquiry into the Distribution of Cancer, Phthisis, and Pneumonia on the Western Slopes of the Cotteswold Hills, *tables* and *charts*, 4
Mason, W. P., Determination of Nitrites in Waters, 714
Match-workers, as affected in Health, by Legal Enactments, Ward on, 772
Matches, Phosphorus in, provisions concerning. agreed to by the International Conference, 772
Maurice, Sir F., *cited* on unfitness of Recruits, 274
Measles, Experimental, L. Hektoen, *abst.*, 776
  Municipal Responsibility concerning, 350
  Recommendations as to, (Newsholme), 398
Measles and Diphtheria, conjoint cases of, Sweden, (Hellström), 651
Meat, (*see also* Unsound Meat), Contamination of, circular to Tottenham butchers, (Butler-Hogan), 800
Meat, and Dairy Products, The Production and Consumption of, conclusions concerning, of the Royal Statistical Society, *table*, 90
Mediæval Houses, overhang of, 141-2
Medical Examination of School Children considered as "assault," 351
  periodical, recommended, 275, 284
  Sergeant on, 244
Medical Inspection in Day Schools, J. B. Wilkinson, 225, 235, discussion, 235
  in Public Elementary Schools, 461, 462
  of Schools, action at Accrington and Cardiff, 786, other places, 787
  West Riding, resolution *re*, 665
Medical Men called in by Midwives, payment of, Hull, 734
  Officer for Education, Kekewich's suggestion, 788
Medical Officers of Health, *see also* County *do.*, Public Health Bill, *and* Security of Tenure
  Certificates of, in connection with Flats, 182-5
  Duties of, under Education Act, *letter*, "D.P.H.," 542
  as Medical Inspectors of Schools, 230 *et seq.*
  in relation to Physical Degeneration and Medical Examination of School Children, 275-8, 280, 282, 292
  Position of, *ed.*, 489
  and Private Practice, question *re*, 538, Maclaren on, 781
  Relations of, and Sanitary Inspectors, the "British Medical Journal" *cited* on, 81
  Shabby Treatment of, (Dr. F. T. Bond), ("Lancet"), 533
Medical Officerships, County, views of the Norfolk County Council on, 206
  Profession, the, its great and noble powers and responsibilities, Norman on, 320
  Staffs for Isolation Hospitals, need of good pay for, Gordon on, 390
Mediterranean Architecture, 140 *et seq.*
Membranous Croup, clinically indistinguishable from Diphtheria, 347
Memorial on Physical Deterioration, from the Anthropological Society to the Education Department, 785
Mental Degeneration, Physical indications of, Jones *cited* on, 303, Lombroso *cited* on, 304
  and Physical Condition of the Children, Do Infant Schools Improve? D. Jackson, 311
Mercantile Marine, the, Fo'c's'le Accommodation in, *ed.*, 73
Meredith, Dr., in discussion on Hygiene in Universities, *etc.*, on Health District Visiting, 221

Merthyr District Council, Action of, under the Housing of the Working Classes Acts, D. J. Thomas, *plans*, 526, 533, discussion, 532
Ablution difficulties in, 531, 532
Lodger question in, *ib.*
Metropolitan Asylums Board, deputation to, from I.S.M.O.H., *re* Sanatoria for London Consumptives, 534
Limit of Scarlet Fever Quarantine imposed by, 395
Mice, etc., course of Anthrax in, after inoculation, 512-13, 514
Michael, W. H., services of, to Public Health in Swansea, 77-9
Microscopical post-mortem diagnosis of Anthrax, difficulties of, 514
Midwives Act,
Cardiff, 734
Training of Nurses in, *ib.*
Nurse as Executive Officer, Hereford, *ib.*
Payment in case of urgency, *ib.*
Reading, Supervision of Midwives at, 734
Qualifications of Inspectors of Midwives, 735
Midwives Act, The, 1902., G. H. Fosbroke, 557, 581, discussion, 574
do., *do.*, E. Sergeant, 583, 593, discussion, 590
"Certificated Midwives," restriction of the term, 572
cleanliness of Midwives, regulations and difficulties concerning, 562, 565-6 *and* 574 *et seq.*
disinfection of Midwives after attendance on Puerperal Fever cases, 565-6
illiterate Midwives, 576, 578, 584
inspection of Midwives' dwellings, 569
instruments required to be carried by Midwives, 563-4, *see also* 585 *and* 615
ladies on Administrative Committees under the Midwives Act, 1902., Fosbroke on, 559
malpractice, investigation of charges of, 570, *see also* 587 *and* 616
misconduct, in Midwives, defined, 570
notification of change of residence of Midwives, 571
do. of Deaths and of Still Births by Midwives, 568, *see also* 589-90
do. of Puerperal Fever, 564-5
payment of doctors when necessarily called by Midwives, 567, *see also* 576, *and* 589, 592
puerperal fever regulations of the Act, 587-8
suspension of Midwives, 571
training of Midwives, 561, 573, 578
Difficulties arising out of, Wilkinson on, 353
Milk, *see also* Co-operative Dairying, Dried Milk, Fat Determinations, Human Milk, Preservatives, *and* Sterilization of Milk
adulterated, sale of by a Midwife, Duncan, *and* Sykes on, 581
Adulteration, Difficulties in dealing with, (*abst.* of Report of the Board of Agriculture for 1903.), *tables*, 86
employment of Agents in Sampling, 88-9
increase in the above difficulties, causes of. 87-8
jurisdiction of Local Authorities in Sampling, 86
Condensed, ordinary, concomitants of, 253
contaminated after purchase, in relation to Zymotic Diarrhœa, 355
Depôts in Germany, Dr. von Ohlen, *tables*, 655
in relation to Epidemic Sore Throat at Paisley, 773
Human, as a source of Tubercular Infection, 354
from Immunized Cows, Effect of Feeding with, (Jemma), 640
the Keeping Property of, The Relation of Temperature to, (Conn., U.S.A.), 92
method of ascertaining quantities of, at Skelldale Dairy, 762
price of, importance of not enhancing, McCleary on, 420, 425-6, 436, others, 429, 431, 433
Pus and Bacteria in, (Bergey), 444
Quality of, and the Use of Preservatives, The Effect of the Weather upon, B. Dyer, T. S. Dymond, *and* J. C. Thresh, 458
Question, The, in Belfast, objections to Sterilized Milk, 451
Milk and Rennet, The Action of Formalin on, E. Löwenstein, (*tables*), 453
Casein of, as affected by Formalin, 452
peptic digestion delayed by Formaldehyde, 453
trypsin digestion stayed by Formaldehyde, 453
Storage of, risks of, 432
Tracing Infection in, Tubb-Thomas on, 431, Willoughby on, 434
in relation to Tuberculosis, unprotected state of London, 555-6
Typhoid due to, decision in Frost *v.* Aylesbury Dairy Co. case, 415
Milk of Cows, Goats, and Rabbits, immunized against Tuberculosis, (Figari), 765
Milk-cans, defects of, Sykes on, 435
"Milkmaid" brand of Milk, state of farms connected with, 430
Milk-producing Counties without County M.O.H., 422

Milk-Shops, Faultily-constructed, The Dangers of, W. Robertson, (*plans*), 445
Milk-Supply ies), in Birmingham, precaution concerning, 451
  Municipal and other, 278, 289
  do., advocated by Wilkinson, 355, Cautley *and* others on, and *cited* on, 426 *et seq.*, 440
    Bill promoting, introduced by Lough, 461
  A Pure, A. J. Laird, (*ill.*), 437, 444, discussion, 443
  Reform of, G. F. McCleary, 419, 433, 436, discussion, 427
  and Scarlet Fever, Cambridge and district, (Anningson), 795
Milking, need of supervision of, Rayment on, 429
Millard, C. K., The Influence of Hospital Isolation upon Scarlet Fever, *letter* (*table*), 59, A Correction, 470
  cited on Small-pox in Leicester, Drs. Glover *and* Niven, 727
  views of, *cited* on Hospital Isolation, 348, 356-7
Miners, coal and ironstone, as affected in Health, by Legal enactments, 772
Miners' Worm Disease, *see* Ankylostoma
Misconduct in Midwives, defined, 570
Mixed Infections in Isolation Hospitals, 362, Anderson on, 366, Gordon on, 384
Monsall Isolation Hospital Methods, *see* Gordon's article, 384
Montreal, Small-pox and Vaccination in, (Laberge), 323
Moore, C., Scarlet Fever, statistics of, *re* Hereford, *cited*, (*tables*), 392 *et seq.*
  S. G. on some causes of Return Cases, 372
Morphinism amongst Criminals and Degenerates, 304
Mortality, Infant, *see* Infant Mortality
Mortality in Swansea in 1845, and in 1866-7, and 1896-1903., 80
  from Tuberculosis, in Paris, (Marie-Davy), 785
Mothers, care of themselves and of their offspring, 320
  proper feeding for, 316
Motoring, The Public Health Aspect of, Herbert Jones, 683, 690, discussion, 687
Motors and Hygiene, ("Lancet"), 729
Munich, Institute of Hygiene at, experiments in, on Nitrification, 775-6
Municipal Control of Zymotic Disease, H. Wilkinson, 343
    Acts imposing the duty of, 343
      complications due to their number, 345, to the loopholes in them, 344-5
    defects in the present system, 345
Municipal Control, in relation to notifiable diseases specified by the Acts—
    Cholera, 347
    Diphtheria, 347-8
    Erysipelas, 348
    Measles, 350
    Membranous Croup, 347-8
    Small-pox, 345-7
    Puerperal Fever, 353
    Relapsing and Continued Fever, 354
    Scarlet Fever, (*table*), 348-50
    Typhoid or Enteric Fever, 352
    Typhus Fever, 352
    Whooping Cough, 350
  in relation to diseases not yet notifiable—
    Diarrhœa or Zymotic Enteritis, 354, 355
    Tuberculosis, 354
  Milk Supply, *see* Milk Supply(ies) Municipal
  Treatment of Physical Deterioration, W. F. Dearden, 237, 245, discussion, 243
Murphy, Sir S., speech at Annual Dinner of Metropolitan Branch I.S.M.O H , (with portrait), 339
  cited on Overcrowding and the Infant Death-rate, 308
Mussels, unfit for Food, Southend Conviction for Selling, 266

NASH, J. T. C., The Epidemiology and the Prevention of Summer Diarrhœa, (*letter*), 794
National League for Physical Education, proposed, 281, objects, 282, 783, Draft scheme, 283, resolution concerning, 292
Neech, J. T., on bandaging noses and ears in cases of discharge in Scarlet Fever, 372
Nervous Diseases, (*see also* Over-pressure), in relation to Physical Deterioration, 316
New Buildings on old sites, encroaching on air and light space, 150, *ills.*, 151, 153
New Property of Acid-fast Bacilli, (Piatowski), 67
New York, results of the use of Dried Milk in, 252
New Zealand, cause of introduction into, of Anthrax, 494
Newcastle-upon-Tyne, improved Health and Physical Stamina, in, during the last 30 years, 301, data and table, 302
  Tenements of one, two, three, or more rooms in, 306-7
Newport, no house famine at, Jones, 533
Newsholme, A., Alleged Physical Deterioration in Towns, *table*, 293
  on Anthrax, 519
  proposing formation of Committee on teaching of Hygiene (carried), 223

Newsholme, A., on Hygiene in Universities, etc., 216
  on Physical Degeneration, 287, Statistics for 1904., *tables*, 329
Nitrification. A Study of the Process of, with reference to the Purification of Sewage, Harriette Chick, *abst.*, 775
Nitrites, Determination of, in Waters, W. P. Mason, 714
Niven, J., on German efforts against Physical Deterioration, 243
  on Small-pox in Leicester, and on Dr. Millard's views, 727
  cited on Typhoid as induced by Privy Middens. 709
Non-notifiable Diseases, *see* Diarrhœa, Zymotic, *and* Tuberculosis
Norfolk County Council, and County Medical Officerships, 206
Norman, A. S., Unofficial Sanitary Work, 314
North Riding Education Committee and Tuberculous Children, 787
Northwich, Enteric outbreak at, and its origin, 441
Norway, Compulsory Notification of Consumption in, (Holmboe), 89
  Epidemic Catarrhal Icterus in, (Nicolaysen), 67
Norway and Sweden, School Instruction in Hygiene in, 213
Notification, (*see also* Compulsory *do.*), of Anthrax, *see* Delépine's paper *and* the discussion
  required from Midwives, 564-5, 568, 571
Notifiable Diseases, (*see* List of, *under* Municipal Control of Zymotic Disease), Ophthalmia Neonatorum, 760
Nottingham, the County of, Death-rates in Rural Districts in, higher than the Urban Rates, H. Handford, 769
Nuisance from Gas-Producing Plant, J P., *letter*, 795
Nurseries, Schools or? (Burnley), 310
Nurse(s) as Executive Officer under the Midwives Act, Herefordshire, 734
  for Fever Hospital, carelessness of, 371, 389, question of training for, Martin and Anderson on, 372, Gordon on, 389; ratio of, to patients desirable, Anderson on, 372

OCCUPATIONS, *see* Industrial *do.*
Official Classification of Diseases in Germany (Prussia). 75
Oil of Cloves for Hand Sterilization, (Webster), 654
Open air in treatment of Scarlet Fever, Anderson on, 367-8
  Spaces, 241; necessary Supervision of, Young on. 244
  windows, 207, 221, chief reasons why not found, in large towns, 221
Operative Treatment of Discharges in Scarlet Fever, Lauder's plan, 758-9
Ophthalmia Neonatorum notifiable in Austria, treatment for, 760
Organic Respiration Products, 33
Otorrhœa as a cause of Return Cases of Scarlet Fever, 358
  spread of, in Isolation Hospitals, real causes, 360
Outbreak, An, of Diphtheria (at Leith), traceable to Ulcers on Cows' Teats, W. Robertson, (*ill.*), 246
Overcrowding in Holiday resorts and in Working men's dwellings, 318
  in Houses, The Supposed Deterioration and Decrease of our Population in relation to, H. E. Armstrong, *table*, 301
  Housing Question in relation to Racial Deterioration, 306
  how is Deterioration to be Estimated? 304
  indications of Deterioration or otherwise of the Population, 303
  Infant death-rate in relation to, 308
  do. in Urban and Rural Districts compared, 305
  Infant Schools, in relation to, 308-9
  remedies, 310
  urbanization, good and bad aspects of, 309
  at Health Resorts, E. Carnell, *letter*, 470
  in Isolation Hospitals, drawbacks of 358-9, 366
Over-pressure, 296
Overtime regulations for Women, under the Factory and Workshop Act, 250
Oxford University, bad ventilation in some of the Colleges, 221
Oxygen Cylinder, use of, in cases of Carbonic Oxide Poisoning, 84
Oysters, Enteric and Shakespeare, 103

P., J., Nuisance from Gas-Producing Plant, *letter*, 795
Paget, Dr. C. E., on the Midwives Act, 1902., in Northamptonshire, 577
Paisley, An Epidemic of Sore Throat in, A. Robb, 773
Paper Money, Dangers of, (Hurty, U.S.A.), 47
Parental Responsibility, Newsholme on, 287, Kerr on, 289, Vincent on *ib.*, Sanders on, 290
Paris, Pasteur Institute at, Results in, of the Cubicle System of Treating Infectious Disease, 407
  regulation for Tenement Water Supply in, 663
  Tuberculosis Mortality in, (Marie-Davy), 785

Parkes, L., *cited* on true Isolation, 367
Parks and "public lungs" in Manchester, 241
Parliamentay Notes, (*see also Public Health Bill*), 460, 558, 614, 732
  Paper *re* School Buildings *cited*, 730
Parsons, Dr. H. Franklin, on Physical Degeneration, 285
Partial Closure of Schools, 664
Pasteur Institute, Paris, Results of the Cubicle System at, for Treating Infectious Disease, 407
Pathogenic Importance of Hyphomycetes (Schilling), 94
Pathological Material sent by Post, G P.O. notice *re*, 738
Paving of Roads, comparative cost, Young on, 689
  of Streets, Yards, etc., as preventive of Infectious diseases, Angior on, 654
Payment for Certificates of Unfitness of Children to attend Schools, some replies to the B.M.A. circular *re*, 665
  of Doctors obligatorily called in by Midwives, 567, *see also* 576, discussion, 589, 592, 734
Peeling, see Desquamation
Pencils and Infection, (R. Jones), 787
Pentonville, illiterates in, 1902., 309
Percival, Dr. Thomas, of Manchester, an early Public Health Reformer, centenary note on, 39
Perflation, *see* Ventilation
Persistance of Plague Bacilli in Rats, (Otto, and Kalle), 784
Personal Hygiene, the three problems of, 419 *et seq.*
Philadelphia, (U.S.A.), University at, Physical training compulsory at, 277
Phœnician houses, 140
Phosphorus in Matches, provisions concerning, agreed to, by the International Conference, 772
Phthisis, *see also* Cancer and
  chronic cases of, as centres of infection, 354
  death-rate from, in relation to the price of Wheat, *table*, 299
  diminution in numbers, of (*a*) those developing, (*b*) those dying from, 298
  places in which the risks of infection from are greatest, 35
Physical Census, recommended, 275
  Condition of the Children, the Mental and, Do Infant Schools improve? D. Jackson, 311
  Degeneration, The Report of the Inter-Departmental Committee on, Sir L. Brunton, 274, 291, discussion, 288. resolution, 292
    feeding School Children, 277
    house accommodation, town and country, 279-80
Physical Degeneration, medical examination of School Children, 275
    M.O.H.'s in prevention of, 275 *et seq.*
    milk supplies, 278-9
    National League for Physical Education and Improvement, the proposed, 281-2
    Physical Census recommended, 275
    Discussion, speakers in
      Allan, Dr. F. J., 289
      Anderson, Miss, 286
      Chalmers, Dr. A. K., 288
      Defries, W., 290
      Gorst, Sir J., 284
      Jones, Dr. J. H., 289
      Kerr, Dr., 288
      McVail, Dr. J. C., *Degeneration*, 286-7
      Newsholme, A., 287
      Parsons, Dr. H. F., 285
      Sanders, Dr. C., 290
      Sykes, Dr. J. F. J., 290-1
      Vincent, Dr. R., 289
Physical Degeneration, Alleged, in Towns, A. Newsholme, *tables*, 293
    adverse features, Alcoholism, 300
    dental defects, 294
    erroneous basis of belief, 293
    food, low price of, 299
    over pressure, 296
    Phthisis, comment on, 298
      death-rate, relation between the price of Wheat and, *table*, 299
    recruits, arguments from unfitness of, not altogether conclusive, 293-4
    rise in the Standard of Comfort, 299
    stature, in relation to, 295
    survival of the *less* fit, 297-8
    urbanization and its effects, 295-6
    wages and outgoings of the Modern Working-man, 296-7
    weakly children in relation to Zymotic diseases, 297
Physical Deterioration, Housing Question in relation to Racial Deterioration, 306
  Memorial on, of the Anthropological Institute to the Education Department, 785
  Municipal Treatment of, W. F. Dearden, 237, 245, discussion, 243
  some rebutting arguments, 315
Physical Education and Improvement, The National League for, 281, objects, 282, 783, draft scheme, 283, resolution concerning, 292
  signs of Mental Deterioration, Jones *cited* on, 303, Lombroso *cited* on, 304
  Training, compulsory, at the University of Pennsylvania, 277
Pigs, (*see also* Pork), course of Anthrax in, 511, how usually infected, 501-3

Plague Bacilli, Persistence of, in Rats, (Otto and Kalle), 784
  Infectivity of, (Elliot), 782
    Channels of Infection, 783
  Outbreak, the third, at Sydney, and Rats, 459
Pneumonia, (*see* Cancer, Phthisis, and), Lobar, Prophylaxis of, J. M. Anders, 777
Poisoning, (*see* Carbonic Oxide *do.*), by Hydrogen Compounds in Workshops, J. C. McWalter, *letter*, 328
Police and Sanitary Committee, The, 461
  do. regulations, Powers of Local Authorities relating to, 48
Pollution of the River Isar, (Hofer), 457
  of Water-cress, (Murphy's Report), 556
Pontypridd, Sanitary defects in Schools at, (Davies), 664
Population of small Towns, Decrease in, (Anderson), 733
  Supposed Deterioration and Decrease of our, in relation to Overcrowding in Houses, H. E. Armstrong, *table*, 301
Pork, (*see also* Pigs), Importation of, from Denmark and Holland, regulations for, 464
Ports scheduled under the Alien Immigrants Bill, 614
Posen, Milk Depôts in, 659
Position, The, of Medical Officers of Health, *ed.*, 489
Post Office Notice *re* Pathological Material sent by Post, 738
Post Offices, French, Official Hygienic Regulations for, 273
Post-scarlatinal Diphtheria, in Isolation Hospitals, 362, 384, 388
Pottery workers, as affected in Health, by Legal enactments, Ward on, 771
Power Gas Corporation, Ltd., notice issued by on Danger of Gassing and on use of the Oxygen Cylinder, 84
Powers, The, of Local Authorities (as to Police and Sanitary regulations), 48
Practical Points, Some, in the Management of an Isolation Hospital, A. K. Gordon, 384
Practitioners, Relation of, to M.O.H., (Maclaren), 781
Premature Weaning, and Infant Mortality, 668
Presentation to Prof. Kenwood, 81
Preservatives, the Use of, the Effect of the Weather upon the quality of Milk, and, B. Dyer, T. S. Dymond, and J. C. Thresh, 458
Presidential Address, Public Health and Architecture, *ill.*, J. F. J. Sykes, 113, 129
Preston, Mayor of, seconding resolution *re* Prevention of Small-pox, 729
Preston and other towns, comparative Infantile Mortality in, 291
Prevention of Consumption, in reference to Steamship passengers, 236
  of Disease and ignorance, 208, 220
  of Hospital Complications, and Return Cases in Scarlet Fever, Some Points in, A. Anderson, 365, 372, discussion, 372
  of Infantile Mortality, resolutions of the Conference on, 667
    breast-feeding of Infants, 667
    encouragement to Mothers, 667
    hand feeding of Infants, 668
    premature weaning, 668
  of Infection in Schools, (Collingridge), 786
  of Small-pox, Conference on, 726
    of Summer Diarrhœa, The Epidemiology and, J. T. C. Nash, *letter*, 794
  and Treatment of Cancer, circular of Liverpool Cancer Research Committee regarding, 94
Priestley, J., Dried Milk, 251
Primitive types of dwellings, 131 *et seq.*
Private Practice by County M.O.H.. question *re* in Parliament, 538
Privy-Middens and Water-closets, The Influence of, in Diarrhœa and Typhoid, A. W. Martin, *tables*, 709
    in relation to Zymotic Disease, 352, 353, 355
Prizes for Cleanliness, in Belfast, 396
Process, the, of Nitrification, A Study of, with reference to the Purification of Sewage, Harriette Chick, *abst.*, 775
Producer Gas for Fumigating Ships, Nocht and Giemsa's experiments, 779
Production and Consumption of Meat and Dairy Products, conclusions of the Royal Statistical Society's Committee concerning, *tables*, 90
Prophylaxis of Lobar Pneumonia, J. M. Anders, 777
Proportion of the Sexes in the U.S.A., 756
Prosecutions for the Sale of Unsound Meat, 97
Prussia and Instruction in Hygiene, 213
  Official Classification of Diseases in, 75
Pseudo-Diphtheria Bacilli, The Virulence of, *ed.*, 271
Public Buildings, Schools and, Ventilation of, (Blizzard), 788
Public Health, the, The London County Council and, *ed.*, 555
  Act(s), The, 1904., *ed.*, 74
    (Amendment) Bill, and Building Byelaws, 614
    Magistrates and, *ed.*, 487
    and Architecture (Presidential Address), *ill.*, J. F. J. Sykes, 113, 129

Public Health Aspect, The, of Motoring, Herbert Jones, 683, 690, discussion, 687
  Bill, L.G.B. attitude to, 732
    Qualifications and Tenure of Office of M.O.H. and Sanitary Inspectors, 321
  Laboratory of, Manchester University, opening of, 391
Public Houses as hot-beds of Respiratory diseases, 35
Puerperal Fever, causes of, Benson on, treatment of, Blair on, 654
  disinfection of Midwives after, 565-6, 588
  legal case concerning, Sykes on, 581
  municipal responsibility concerning, 353
  notification of, 564, 588
  regulations of the Midwives Act of 1902., concerning, 587-8
  Young on his precautions with Midwives after attendance on, 593
Pugging as a cause of dry-rot, (Nussbaum), 601
Pulmonary Consumption, (diagnosis of), Early, J. E. Squire, *tables*, 40
Pure Milk Supply, A, A. J. Laird (*ill.*), 437, 444, discussion, 443
  bacterial Standard for Milk desirable, 442
  certificates to Milk dealers, 440
  Local Authorities, laxity of in enforcing Dairy Regulations, 441
  milk contamination between Dairy and Drinker, 437
  objects to be aimed at, in securing, 441
  reforms necessary in the Milk Trade, 441
  sterilization, erroneous views concerning, 438
  uncleanly dairymen and methods, 438-9
Purification of Sewage, the, A Study of the Process of Nitrification with reference to, Harriette Chick, *abst.*, 775
Pus and Bacteria in Milk, (Bergey), 444

QUALIFICATIONS of Inspectors of Midwives, B.M.A. resolution *re*, 735
  of M.O.H., and Bill *re* introduced by Hutchinson, 538
Quality of Milk, *see* Milk
Quantity *versus* Quality in Milk, Laird on, 441
Quarantine, Conference of the Australasian Commonwealth on, 93
  after Diphtheria, Iowa (U.S.A.), rules for, 236
  period for, after Scarlet Fever, 395-6

RABBITS, (*see* Milk of Cows, Goats, and), Coccidiosis in, Board of Agriculture on, 732
Racial Deterioration, *see* Physical Deterioration
Railway Milk Vans, dirtiness of, Sadler on, 428, Rayment on, 429, Bond on, 434, desiderata concerning, 442
Rats, dying of, traditional, Victorian, and recent scientific views on, 701
  Persistence of Plague Bacilli in, (Otto, and Kalle), 784
  in connection with the Third Plague Outbreak at Sydney, 459
Ravenhill, Miss, on Hygiene in Universities, etc., 215
Rayment, Dr., on Reform of Milk Supply, 429, 430
Reading, supervision in, of Midwives, 734
Rear of buildings, provision of light and air for, 147
Recommendations as to Measles, (Newsholme), 398
Recruits, percentages of, below standard, 1892-93., 274, 293-4, statistics concerning, unreliability of, as refers to Deterioration, Cunningham *cited* on, 305
Red Light, Vaccination under, (Rösler), 464
Rees, Dr., on Domestic Sanitation and Infantile Diarrhœa, 654
Reform, The, of the Milk Supply, G. F. McCleary, 419, 433, 436, discussion, 427
  cleanliness, civic, the aim of the 19th Century, 419
  of person and appliances in Milkers, importance of, 420, 425, 436
  civic enterprise of modern times, 423, in relation to Milk supply, 424
  consumers' difficulties in securing Pure Milk supply, 421
  cows best kept in the open, 420
  education, over-estimated in relation to hygienic improvement, 421
  four essentials to purity of supply, 420
  inspection and its limits, 425
  municipalization of Milk supply, Cautley and Mackenzie *cited* on, 426
  personal Hygiene, the problems of, 419, *et seq.*
  price ol Milk, the importance of not enhancing, 420, 425-6
  proposed transference of Milk Law administration to the County Councils, 422-3
  threefold aspect of the Milk Supply problem, 420
Registration, Compulsory, of Milk Purveyors, a primary necessity, 441
Re-housing, Insanitary property and, in Liverpool, (Turton), 772
  loans to Local Authorities for, 372
Relation of Practitioners to M.O.H. (Maclaren), 781
  of Temperature to the keeping property of Milk (Conn., U.S.A.), 92

- Relations of M.O.H. and Sanitary Inspectors, "British Medical Journal" *cited* on, 81
- Rennet, *see* Milk and Rennet
- Renney, H., Diphtheria, 704, discussion, 708
- Repairs *versus* closing, of dilapidated Workmen's dwellings, *see* Thomas' paper *and* discussion
- Reports, *see also* Board of Agriculture *and* Reviews:—
  - British Association for Advancement of Science, (*interim*), on Ankylostoma in Coal Mines, 245
  - of the Committee of the Royal Institute of Public Health, on the Standardization of Bacterioscopic Examination of Water, 44
  - of the Inter-departmental Committee on Physical Degeneration, Sir L. Brunton, 274, 291, discussion, 284, resolution, 292
  - of Royal Commission on Sewage, 733
  - of the Vaccination Expenses Committee, *abst.*, 462
- Respiration Products, Chemical, 32, and organic, 33
- Results of the Cubicle System of treating Infectious disease (Paris Pasteur) Institution), 407
- Retrospect, A., of the Sanitary Condition of Swansea, E. Davies, 76
- Return, The (of Manufacturers) to the Country ("Times"), 533
- Return cases of Scarlet Fever in relation to Hospital Isolation, 357, 370, in relation to privately-nursed cases, 358, some alleged causes of, 358, infrequency of, in fact, 360
  - Some Points in the Prevention of Hospital Complications and, A. Anderson, 365, 372, discussion, 372
    - *do.*, Anderson on, 370, Willoughby on, 374, *et seq.*
- Re-Vaccination, (*see* Prevention of Smallpox), of Children, 461
  - Memorial on, to the L.G.B., etc., Mayors of Towns, signatories to, 726
- **Reviews**:—
  - Allison's *Health in Infancy*, 792
  - *Annual Report of the Metropolitan Asylums Board for* 1903., 99
  - Barnes' *How to keep "Fit," or the Sailor's Guide to Health*, 793
  - Barr's *Mental Defectives*, 539
  - Caldwell's, (Major), *Prevention of Disease in Armies in the Field*, 58
  - Chenery's, (Miss M,), *Pocket Handbook for Monthly Nurses*, 792
  - Critchley's *Aid to the Study of Sanitary Law*, 539
  - *Gesundheits-Ingenieur*, special number of, dealing with heating and ventilation, 794
- **Reviews** *(continued)*—
  - Klopstock's and Kowarsky's *Manual of Clinical Chemistry, Microscopy, & Bacteriology*, (trs T. Wright), 793
  - Leach's *Food Inspection and Analysis*, 100
  - McCleary's *Infantile Mortality and Infants' Milk Depôts*, 473
  - *Medical Annual, The*, 474
  - Midwives' Supervising Committee of Manchester's *Instructions to Midwives*, 793
  - *Model Answers to Questions set by the Sanitary Institute*, 56
  - Newman's *Bacteriology and the Public Health*, 267
  - Oehmcke's *Health and Municipal Building with Large Open Spaces*, 98
  - Pure Drinking Water, (Defries & Sons, Ltd). 681
  - Report (66th Annual) of the Registrar-General on Births, Deaths, and Marriages, 540
  - Richards' *Practical Chemistry, including Simple Volumetric Analysis and Toxicology*, 99
  - *Sanitary Measures in India*, (Blue-book), 267
  - Simpson's *Treatise on Plague*, 679
  - Squire's *Appendix to the Pocket Companion to the British Pharmacopœia*, 793
  - Startin's *Care of the Skin and Hair*, 792
  - Stephens, (Mrs. F.), *How to Manage a Baby*, (revised by Dr. Collingridge), 792
  - Tebb and Vollum's *Premature Burial, and How it may be Prevented*, (*ed.* Hadwen), 539
  - Thresh's *Examination of Waters and Water Supplies*, 56
  - Vacher's *Food Inspectors' Handbook*, 792
  - Watson's *Natural Science in Hygiene*, 792
- Rew, R. H., *see* Royal Statistical Society
- **Rhinorrhœa** as a cause of Return Cases of Scarlet fever, 358
  - spread of, in Isolation Hospitals, real cause of, 360
- Richards, H. M., on Hygiene in Universities, etc., 220
- Robb, A., An Epidemic of Sore Throat, 773
- Robertson, J., Dried Milk, *letter*, 328
  - W., Dangers of Faultily-Constructed Milk shops (plans), 445
    - Outbreak of Diphtheria (at Leith), traceable to Ulcers on Cows' Teats, (*ill.*), 246
- Robinson, F., on Anthrax and Boyce's experiments, 522
- **Rötheln**, disease resembling, on a Dutch ship, 778

Royal Commission on Sanatoria for Consumptives suggested, (Kelynack), 784, report promised, 733
Institute of Public Health, Report of its Committee on the Standardization of Methods for the Bacterioscopic Examination of Water, 41
Sanitary Institute, enquiry by, of B.M.A. on Qualifications of Inspectors of Midwives, 735
Statistical Society, conclusions of its Committee as to the Production and Consumption of Meat and Dairy Produce, *table*, 90
Rural Councils carrying out Building Operations under the Housing of Working Classes Acts, 751-3
Districts, the Application in, of the Housing of the Working Classes Acts, T. W. H. Garstang, 747, 756, discussion, 756
in the County of Nottingham, Death Rate in, higher than the Urban Rates, H. Handford, 769
Housing difficulties, 193-4
and Rural Bye-laws, *ed.*, 203
Water supply, one difficulty concerning, Young on, 756
Russell, Dr. J. B., death of, 102
Russia, Siberia, etc., prevalence of Anthrax in, 518

SADLER, J., on Reform of Milk Supply, 427
St. Asaph, Sanitary Condition of, (Roberts), 538
St. Louis, U.S.A., Clarification of its Water, 556
Sale of Whisky Bill, 1905., the, A Criticism of, J. R. Currie, 607
Distillation in relation to Whisky, 607 *et seq.*, apparatus employed, 608
Sampling of Milk, Employment of Agents in, 88
Jurisdiction of Local Authorities in, 86
Sanatoria for Consumptives, Royal Commission suggested (Kelynack), 784
for London *do.*, I.S.M.O.H. Deputation *re* to the Asylums Board, 534
for Workers suffering from Tuberculosis, 49
Sanders, C., on difficulties at West Ham, and on Parental Responsibility, 290
on the Midwives Act, 1902., its financial Aspect, 579
Sanitary Condition of St. Asaph, (Roberts), 538
of Swansea, A retrospect, E. Davies, 76
Sanitary Inspectors, (*see also* Public Health Bill), Female, (Coutts), 780
Relations of M.O.H. and, "British Medical Journal" *cited* on, 82

Sanitary
regula
Work
Sanitati
Saraceni
Scarlati
Scarlet
dimin
and
Incide
Influe
Isolati
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disi
inte
nur
ope
retu
Scarlet
Incide
Quara
Value
Scattert
School(s
Day,

School(s), difficulties concerning, at West Ham, 290
  and Diphtheria, *see* Diphtheria
  exclusion and Infectious Diseases, difficulties concerning, 664, 665
  (Public Elementary), Exclusion of Infants from, *see* Infants, Exclusion of
  Insanitary, in the Highlands, 666
  Medical Inspection of, West Riding resolution *re*, 665, Accrington *do.*, 786
  at Pontypridd, Sanitary Defects in, (Davies), 664
  Prevention of Infection in, (Collingridge), 786
  and Public Buildings, Ventilation of, (Blizzard), 788
School Buildings, Parliamentary Paper *re*, 730
School Children, (*see also* Day Schools, Infant Schools), Defective sight and other troubles in, 276
  Effect on, of Alcohol, T. A. Macnicholl, 774
  Feeding of, 277, 284, 287, 288, 316
  Health of, (Southport), 787
  Medical Examination of, 647-50; *do.* considered as "assault," 351
  Observation of, by Teachers desirable, 648
  and Vaccination, (Horder), 245
School-girls, fainting among, Clowne, Derbyshire, 664
School Hygiene, 664, 730
  scope of, 230
  Medical Officers, The Duties of, School Sanitation and, A. Greenwood, *table*, 641
  Sanitation, and the Duties of School Medical Officers, A. Greenwood, *table*, 641
    Duties of School Medical Officers, 641
      as understood at Blackburn, 643
    Infectious Diseases in Schools
      Prevention and Notification, 645-7
      Ventilation in relation to, 645-6
    Medical Inspection of School Children, 647
      Co-operation of Teachers in, 648
      of Eyesight and Hearing, 649
      of Verminous and helpless and deficient children, 650
  Sanitary Conditions of School Buildings, 643
School-Age, (*see* Infants, Exclusion of), deaths during, some causes, 234-5
School-Books, Disinfection of, in the U.S.A., 62
School-Masters, low death-rate among, its probable reasons, 35
Schoolrooms, Disinfection of, with Formaldehyde, U.S.A., 622
School-Teachers, *see* Teachers
Scotland, *see* Aberdeen, Glasgow, Govan, Lanarkshire, *and* Leith
Scotland *(continued)*—
  Analysts' Reports on the Milk, Butter, and Cheese dealt with, 1901-3., inclusive, *table*, 86
  County M.O.H. in, and Private Practice, question *re* in Parliament, 538
  Insanitary Schools in the Highlands, 666
  Names in, for house and flat respectively, 167
  Physical Degeneration in, and its causes, 293
Scottish School Board, Domestic Training, methods of, 286-7
Seaton, E., on the Midwives Act, 1902, 579
Security of Tenure of M.O.H., *see* Parliamentary Notes, Position of M.O.H. *and* Public Health Bill
    in relation to the application in Rural Districts of the Housing of the Working Classes Acts, Garstang on, 752, 755, Brunton on, 292, Maclaren on, 782
  of Public Health Officials, (Public Health Engineer), 791
Segregation, 367, 384
Separate Collection of Waste Paper, (at Bury), 773
Sergeant, E., The Midwives Act, 1902., 583, 593, discussion, 590
  in discussion on Housing of the Working Classes Acts in the Country, 756
  on the importance of Medical Examination of School Children, 244
  on Motoring and Public Health, 687
  cited on Privy Middens as sources of Disease, 709
Serum anticharbonneux in agricultural Anthrax in man, 517
Settle, Dr., on Motoring and Public Heath, 690
Sewage, and Sewage Disposal, *see* Privy Middens, Royal Commission
  Disposal Commission, 461, cost of, and issue of, *re* report, 614
  Effluent Standard, (Dunbar), 91
  Pollution of Drinking Water in relation to the Lincoln Typhoid epidemic, 364
  the Purification of, A Study of the Process of Nitrification with reference to, Harriette Chick, *abst.*, 775
Sewer-gas, causing Diphtheria, etc., 697-8
Sexes, The Proportion of, in the U.S.A., 756
Shabby Treatment of a M.O.H., (Dr. Bond), ("Lancet"), 533
Shakespeare, Oysters and Enteric, 103
Sheep, course of Anthrax in, 511, 512
Sheffield, Scarlet Fever in, F. H. Waddy, *letter*, 472, W. G. Willoughby, *letter*, 541

Strachan, W. S. (joint-author), *see* Thresh, J. C.
Stratification (social) in Continental flat-dwellings, 152
Street-Car Ventilation, Walker's device for, U.S.A., 39
Streets, Width of, etc., in relation to light and air, 143-8, 146-7
Strassburg, Milk Depôts in, 660
Study, A, of the Process of Nitrification, with reference to the Purification of Sewage, Harriette Chick, *abst.*, 775
  of the Vital and other Statistics of the Jews in the United Kingdom, A Contribution to, *abst.*, 766
Stuttgart, Milk Depôts in, 661
Sub-letting of dwellings, 185
Suburban Working Class Dwellings, 192-3
Sufficiency, The, of Isolation Hospitals, H. Handford, 397
Suffolk, Sterilization of Milk in, 430
Summer Diarrhœa, The Epidemiology and the Prevention of, J. C. T. Nash, *letter*, 794
Sunderland, (*see* Diphtheria in), and the exclusion of Infants from Schools, 666
Sunlight in streets, 144-7
Supposed Deterioration and Decrease of our Population, The, in relation to Overcrowding in Houses, H. E. Armstrong, *table*, 301
Survival of the *less* fit, 297-8
Suspension of Midwives, 571
Swansea, Housing Question in, Davies, 533
  Sanitary Condition of, A Retrospect, E. Davies, 76
    Diarrhœa Mortality in, 80
    Enteric fever outbreaks in, 1879 and 1885., 79
    Epidemics in, 1863-73., 79
    Infantile Mortality in, 80
    Michael's labours in behalf of Public Health in, 77-9
    Mortality in, 1845, causes of, 76, the same in 1866-75, and 1896-1903., 80
    Yellow Fever outbreak at, 1865., 78
Sweden, (*see* Finland and Sweden), joint cases in, of Measles and Diphtheria, (Hellström), 651
Swinton Schools, Manchester, good work of, 239
Sydney, The Third Outbreak of Plague at, and Rats, 459
Sykes, J. F. J., Presidential Address, Public Health and Architecture, *ill.*, 113, 129
  on Anthrax in Great Britain, 517, and on its danger to Man, 523
  on Hygiene in Universities, etc., 214, 221
  on his induction as President, 104
  on Infant Mortality, need for ages in Statistics, and on Physical Degeneration, 290-1
Sykes, J. F. J., on the Midwives Act, 1902, and illiterate Midwives, 581
  on Motoring Dust, and the Public Health, 691
  on Reform of Milk Supply, and on Sterilization, 435
Symons, W. H., Atmospheric Pressure and Apoplexy, *charts* and *tables*, 602
  on Housing outlay at Bath, 533

TANNING Process, The Influence of, upon Anthrax spores, (Kessler), 273
Tattersall, C., on raising the School age, 244
Taylor, Sir W., *see* Report . . . on Physical Deterioration
Teachers, views of, on Exclusion of Infants, 312
Teaching of School Hygiene to School Teachers, Worcestershire, 664, Manchester, 787
Teats, *see* Cows' Teats
Teeth, Caries of, a sign of Physical Deterioration, 294, 315
Temperature, Relation of, to the Keeping Property of Milk, (Conn., U.S.A.), 92
Tenement houses, desiderata concerning, 185-91
  Water Supply, Paris, 663
Tents, and their bearing on nomadic life, 132, 133
Tenure of Office of M.O.H., *see* Public Health Bill *and* Security of Tenure
Tew, J. S., on the Midwives Act, 1902., in Hampshire, 578
Textile operatives, as affected in Health by Legal enactments, Ward on, 771
Thermometer, The, and its use by Midwives, 563, 575, and throughout discussion
Third Plague Outbreak at Sydney, and Rats, 459
Thomas, D. J., The Action of the Merthyr District Council under the "Housing of the Working Classes Acts," *plans*, 526, 533, discussion, 532
Thomas, J. Tubb-, on the Midwives Act, 1902., in Wiltshire, 578
  on Reform of Milk Supply, 430
Thornton Farm, Anthrax outbreak at, 510
Thresh, J. C., joint author, *see* Dyer
  and W. S. Strachan, The Bacteriological Examination of Water, *tables*, 594
Tidman, E., death of, 273
Timber dwellings, region of, 138
Tooth, Dr. H., *cited* on Typhoid spread by Flies in South Africa, 712-13
Tottenham District, circular to Butchers in, *re* Meat Contamination, (Butler-Hogan), 800

Tower Street School and Health Visitors, Gorst on, 284, Allan on, 289
Town Dairymen, difficulties of, Buchan on, 443
Town-dwelling, (*see also* Urbanization), increase in, and Physical Deterioration, Wheatley on, 244
Towns, Alleged Physical Deterioration in, A. Newsholme, *tables*, 293
  Small, Decrease in the Population of, (Anderson), 733
    Milking and Milk Supply Methods in, Laird on, 438-9
Tradition in Medicine, value of, 701, 702
Training of Midwives, (Cardiff), 734, need for provision for, 353, 561, 573, 578
  for Nurses of Fever or Isolation Hospitals, 372, 389
Tramps, dissemination of Small-pox by, 121; (Barwise), 224
Transit, Dangers incurred by Milk during, (*see also* Railway Vans), 437, 438, 441, 442
Transmission of Tuberculosis through Flies, (Hayward), 418
Treatment advised for Ophthalmia Neonatorum in Austria, 760
  of Cancer, the Prevention and circular to M.O.H. on, of Liverpool Cancer Research Committee, 94
  of Discharges in Scarlet Fever Patients, W. McCallin, 757
    Lauder's Methods, at Southampton, chiefly concerned with the Throat, 757
    methods employed to this end, 758, results, 759-60
    Peeling in, 757
  of Tuberculosis, An Aid in the, (Cyllin), W. C. Lodwidge, *letter*, 103
Tropical Fever, Unidentified forms of, (Silberstein), 778
Tsetse Fever and its causes, Koch *cited* on, 708
Tubb-Thomas, J., see Thomas, J. Tubb-
Tubercular diseases, Death-rate from, England, Wales, and London, 784
  Housing in Rural districts in relation to, 770
Tuberculosis, An Aid, in the Treatment of, (Cyllin), W. C. Lodwidge, 103
  Aids to the Diagnosis of, (Marzagalli, and Holmgren), 408
  in relation to Architecture, 195
  The Automobile and, (Blanchet), 691
  of Fowls, (Weber and Bofinger), 691
  of the Lungs and other Tuberculous diseases, more fatal in Rural than Urban districts, 1903., 769
  in Milk, difficulty of tracing its source, Tubb-Thomas on, 431
  Milk of Cows, Goats, and Rabbits immunized against (Figari), 765
  spread by Milk, unprotected state of London, 555-6
Tuberculosis *(continued)*—
  Mortality in Paris, (Marie-Davy), 785
  Municipal Responsibility concerning, 354-5
  Pulmonary, Death-rate from, in one roomed and other tenements in Glasgow, 308
  Sanatoria for workers suffering from, 49
  Transmission of, through Flies, (Hayward), 418
Tuberculous School-Children, action of the North Riding Education Committee, 787
Typhoid Fever, the Angel of Sanitary awakening in Great Britain, 164
  disseminated by Flies, 712-14
  caused by filth, 699, obvious causes of, other than Flies, 714
  due to Milk, decision in *Frost v. Aylesbury Dairy Co. case*, 415
  Excreta, extreme infectiousness of, 385
    Izal as a Disinfectant for, 386
  Hands as a chief means of conveying infection of, 353, (*see* 385)
  Influence of Privy-Middens and Water-Closets in Diarrhœa and, A. W. Martin, *tables*, 709
  Japanese Precautions against, 682
  at Lincoln, 1904-5., 364
  Municipal responsibility concerning, 352
  Outbreak at Northwich in relation to an unregistered Dairy, 441
Typhus Fever, diminution of, in Newcastle-on-Tyne, 302
  practically abolished by Sanitation, 352
  and Vermin (fleas), (Hay), 535

ULCERS on Cows' Teats, An Outbreak of Diphtheria, (at Leith), traceable to, W. Robinson, (*ill.*), 246
Underground dwellings, work-places, etc., 185-91
Unfit Children, Exclusion of, from Day Schools, 227-8
Unfitness of Children to attend Schools, Payment for Certificates of, some replies to the B.M.A. circular *re*, 665
Unidentified Forms of Tropical Fever, (Silberstein), 778
United Kingdom, the, the Jews in, A Contribution to the Study of the Vital and other Statistics of, *abst.*, 766
United States, *see* America, United States of,
Universities and Schools, Instruction in, in Hygiene.—A Proposal, G. A. Heron, 207, 222, discussion, 214
Unofficial Sanitary Work, A. S. Norman, 314
  Anæmia and Food, 315
Unsound Meat Prosecutions, 97

Urban (Death) Rates, Death-rates in the Rural Districts in the County of Nottingham, higher than the, H. Handford, 769
  District Councils Association, resolution of, *re* Medical Inspection of School Children, 787
  and Rural Death-rates compared, 295, deductions, 296
    Districts, Infant Mortality in, compared, Armstrong on, 305
  Sanitation and Death-rates, 309
Urbanization, (*see also* Town Dwelling), and its evils, 309
Use, the, of Preservatives, The effect of the Weather upon the Quality of Milk and, B. Dyer, T. S. Dymond, and J. C. Thresh, 458
  of Water Gas and other Gases in Factories — Carbonic Oxide Poisoning, A. Whitelegge, 82

VACCINATION Expenses Committee, Report of, *abstr.*, 462; A. E. Cope, *letter*, 542
  in Montreal, (Laberge), 323
  by the Public Vaccinator, L.G.B. on absence of disabilities incurred by, 622
  under Red Light, (Rösler), 464
  and Re-vaccination, dangers of the present law concerning, 346
  School Children and, (Horder), 245
Vaccine Lymph Calves as Food, 732
Vacher, F., on Medical Inspection in Day Schools, 235
  on Manchester provision of open spaces, 243
Vagrancy and the Spread of Infectious Disease, result of the Conference on, 669
Vagrants and Small-pox, Conference concerning, 121; (Barwise) 224, as spreaders of Small-pox, 347
Value of (Isolation) Hospitals for Scarlet Fever, G. Willoughby, 373, 383, discussion, 381
Vendors of Infected Food, The Liability of, C. E. Allan, 415
Ventilation, 144, Draught Prevention in Churches and Lofty Halls, (Rietschel), 540
  its four sub-divisions, 157 *et seq.*, 180 *et seq.*
  of the House of Commons, 462
  and overcrowding in relation to Tuberculosis in Paris, 785
  Novel System of, (Adam & Co.'s), 525
  Rural, deficiencies of, in relation to Tubercular diseases, 770
  in Schools, 645
  of Schools and Public Buildings, (Blizzard), 788
  Standards of, J. S. Haldane, 32, Editorial comment, The Battle of the Standards, 1
  of Street Cars, Walker's device for U.S.A., 39
Vermin (fleas) in the transmission of Typhus Fever, (Hay), 535
Verminous children, Exclusion of from Schools, 650
Vienna, Institute of Hygiene at, experiments on Nitrification, 775-6
Villages, English, dearth of Local Milk Supplies in, 430
Vincent, Dr. R. on Parental Responsibility and on Municipal Milk supplies, 289
Virulence, The, of Pseudo-Diphtheria Bacilli, *ed.*, 271
Vital and other Statistics of the Jews in the United Kingdom, a Contribution to the Study of, *abst.*, 766

WADDY, F. H., Scarlet Fever at Sheffield, 472
  deductions of, on Return Cases, 374
Wales, (*see* Merthyr, Pontypridd, and St. Asaph), the Teaching of Hygiene in, 220
Walford, E., in discussion on Hygiene in Universities, *etc.*, 220
  on Insanitary Dwellings, 532
Walker, Dr., of Brooklyn, U.S.A., and his device for Street Car Ventilation, 39
Wallace, Dr. James, M.O.H., Greenock, death of, 103
War Office conditions *re* Standardization of Disinfectants, 490
Ward, L., The Effect as shown by Statistics, of British Statutory Regulations, directed to the Improvement of the Hygienic Conditions of Industrial Occupations, 771
Warranty, *see* Liability of Vendors of Infected Food
Waste Paper, Separate Collection of, (at Bury), 773
Water, The Bacteriological Examination of, J. C. Thresh, and W. S. Strachan, *tables*, 594
  Bacterioscopic Examination of, The Standardization of Methods for, Report of the Committee of the Royal Institute of Public Health on, 44
  Companies and the question of Warranty, 416-7
  of St. Louis, U.S.A., Clarification of, 556
Water-carts, usual inefficiency of, Young on, 689
Water-Closets, Influence of Privy-Middens and, in Diarrhœa and Typhoid, A. W. Martin, *tables*, 709
  London regulations concerning, 161-3, 164
Water-Cress, (London), Pollution of, (Murphy's Report), 556

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JUBILEE OF THE SOCIETY, 1905-1906.

In connection with the Jubilee of the Society arrangements are now being made to hold an International Congress and Exhibition dealing with ***Food and Food-stuffs, etc.***, in London during the summer of 1906. The following sections have been decided upon:—

Economic.
Bacteriological.
Chemical and Analytical.
Physiological.

Further details will appear in subsequent issues of *Public Health.*

MEETINGS OF THE SOCIETY.

1 Upper Montague Street, Russell Sq., London, W.C.

Friday, October 13th, 1905. Annual Meeting. Presidential Address, Sir Shirley F. Murphy.

Friday, November 10th, 1905. "A Comparative Study of the Lincoln, Maidstone, and Worthing Epidemics," Dr. Christopher Childs.

Friday, January 5th, 1906.
Friday, February 9th, 1906.
Friday, March 9th, 1906. Dr. Philip Boobbyer.
Friday, April 13th, 1906.

The next election of Fellows will be in October, in which month a new volume of *Public Health* begins. The present time is therefore most suitable for nomination.

Northern Branch.

October 27th. At Newcastle-on-Tyne. "Methods of dealing with Laundries in case of Infectious Disease amongst their Employés or Customers." Dr. Armstrong.

RETURN CASES OF SCARLET FEVER AND DIPHTHERIA. SCHEDULE OF ENQUIRIES.

Additional copies of the Schedule may, at any time, be obtained free of charge from the Hon. Secretaries, 1, Upper Montague Street, Russell Square, W.C.

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Continued on p. xii.

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THE ROYAL METEOROLOGICAL SOCIETY.—LECTURES, LOAN OF LANTERN SLIDES.—The Council of the Royal Meteorological Society, being desirous of advancing the general knowledge of meteorology, and of promoting an intelligent public interest in the science, have appointed a lecturer who is prepared to deliver lectures on meteorological subjects—*e.g.*, how to observe the weather, weather forecasting, climate, rainfall, thunderstorms, meteorology in relation to agriculture, health, etc. The lectures will be illustrated by lantern slides from the large collection in the possession of the society. Societies and institutions wishing such lectures will be expected to pay a moderate fee, and to defray travelling expenses. The Council are willing to arrange for exhibiting at the gatherings of local scientific societies, institutions, or schools, a collection of photographs, drawings, diagrams, and charts illustrating meteorological phenomena, and of various patterns of instruments used for meteorological observations. They would also, if desired, lend and fit up a complete climatological station for exhibition, showing the necessary instruments in position and ready for use. The cost of transit and the expenses of a member of the staff in fitting up and superintending the exhibit would be borne by the society or institution inviting the co-operation of the Royal Meteorological Society. The Council are further prepared to lend sets of lantern slides, illustrating meteorological phenomena and instruments, at a charge of 1s. per dozen and cost of carriage (*minimum* amount 3s.). Further details on the subject can be obtained from the assistant secretary, Royal Meteorological Society, 70, Victoria Street, S.W.

Continued on p. xiii.

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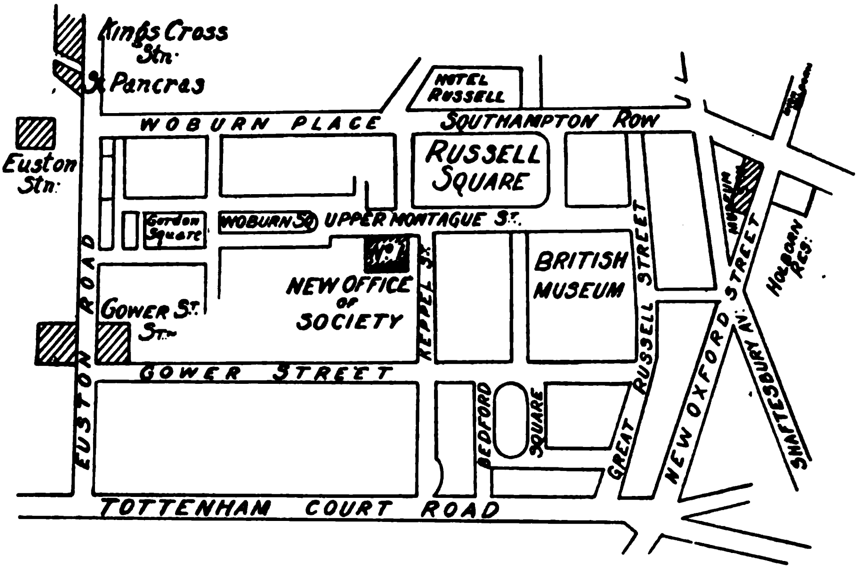

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